ADMINISTRATION REPORT

OF THE

WITH THE COMPLIMENTS
OF THE DIRECTOR
DEPARTMENT OF AGRICULTURE
TRINIDAD & TOBAGO

DIRECTOR OF AGRICULTURE

FOR THE YEAR 1952

COLONY OF TRINIDAD AND TOBAGO

Trinidad—A. 33/53

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ADMINISTRATION REPORT

OF THE

DIRECTOR OF AGRICULTURE

TRINIDAD AND TOBAGO

FOR THE YEAR 1952

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DEPARTMENT OF AGRICULTURE, TRINIDAD AND TOBAGO
SCIENTIFIC AND TECHNICAL STAFF

(*As at 31st July*, 1953)

Director of Agriculture	... C. HOLMAN B. WILLIAMS, M.A., A.I.C.T.A., D.I.C.T.A.
Deputy Director (Crop Husbandry) ...	... E. S. CAPSTICK, B.A., A.I.C.T.A.
Deputy Director (Animal Husbandry) ...	... L. R. HUTSON, B.V.SC., D.V.SC.
Deputy Director (Research)	... B. G. MONTSERIN, PH.D., M.SC., B.S.A.
Plant Pathologist ...	... VACANT
Agronomists ...	... D. M. HANSCHELL, B.SC., A.I.C.T.A.
	L. L. DE VERTEUIL, D.I.C.T.A., F.R.H.S.
	E. A. TAI, M.SC., D.I.C.T.A.
Economic Botanist ...	... L. JOHNSON, B.SC.
Entomologist ...	... VACANT
Soil Chemist ...	... G. C. WITT, B.SC., A.R.C.S.
Rice Officer	... E. G. BENSON, B.SC., A.I.C.T.A.
Agricultural Economist	... VACANT
Senior Agricultural Officer	... VACANT
Agricultural Officers ...	... G. P. BLAIR, M.SC., B.SC., D.I.C.T.A.
	J. F. BELL, B.SC.
	R. BARRIE-SMITH, B.SC., Dip. Agric., D.T.A.
	2 VACANT
Marketing Officer ...	... V. O. FERRER, M.SC., D.I.C.T.A., F.R. ECON. S.
Soil Survey Officers ...	... C. B. BROWN, B.SC.
	VACANT
Veterinary Officers ...	... HOLMAN E. WILLIAMS, D.V.M., M.SC.
	F. O. GONZALEZ, M.R.C.V.S., B.SC., D.I.C.T.A.
	H. N. METIVIER, B.A., M.R.C.V.S.
	W. P. UNSWORTH, M.R.C.V.S.
	H. V. M. METIVIER, O.B.E., I.S.O., M.R.C.V.S., B.SC. (Special duties)
	J. L. SHANNON, D.V.M. (Temporary)

Executive Officer, Land Settlement Development	P. O. M. HOSTEN
Superintendent, Public Gardens, Grounds and Pastures	I. HOSEIN, B.SC., D.I.C.T.A.
Manager, St. Augustine Station	VACANT
Senior Agricultural Assistants	V. I. MULLOON, D.I.C.T.A.
	D. M. FARRELL
	A. E. JOSEPH
	R. MOOSAI-MAHARAJ, D.I.C.T.A.
	V. C. R. HENRY, D.I.C.T.A.
	E. J. HAMILTON, M.SC., D.I.C.T.A.
	T. O. PHILLIPS
	P. J. DOMINIQUE, M.B.E.
	F. RAPHAEL
	R. E. GREAVES, Dip. Agric.
	W. O. BISHOP, D.I.C.T.A.
Agricultural Assistants	H. H. BEACH, D.I.C.T.A.
	C. A. FORD
	I. E. TELFER, D.I.C.T.A.
	W. A. MCMILLAN
	S. BHARATH
	G. KHAN, Dip. Agric.
	S. REDMAN, D.I.C.T.A.
	E. L. ITON
	M. A. LA CHAPELLE, B.SC.
	G. F. BALLY
	S. G. ACHONG
	P. C. SCANTLEBURY
	E. M. JONES
Manager, Tobago Farm	A. N. XAVIER
Stock Inspectors	D. MACFARLANE
	L. PREUDHOMME
	H. MOHAMMED
	G. HARNANANSINGH
	R. ALI
	A. GEORGE
	P. E. LEZAMA

Fisheries Officer ...	... W. A. King-Webster
Fish Culturist ...	... Vacant
Fishery Assistants ...	... F. O. Assam
	J. S. Kenny
	Vacant
Inspector of Apiaries ...	... E. A. Emond
In addition there are ...	... 19 Field Assistants, Grade I
	70 Field Assistants, Grade II
	3 Scientific Assistants
	1 Laboratory Assistant
	2 Junior Scientific Assistants

Cocoa Board

Chief Rehabilitation Officer	... E. R. Moll, B.Sc., D.T.A.
Officer-in-Charge, La Pastora Propagating Station	... P. C. Scantlebury
Officer-in-Charge, King's Bay Propagating Station	... E. A. Black
Officer-in-Charge, Marper Propagating Station	... C. A. Phillips
In addition there are ...	... 10 Field Assistants, Grade I
	10 Field Assistants, Grade II

Marketing Board

Assistant Marketing Officers	... L. C. Farrell
	F. A. Rawlins
Senior Marketing Assistants	... W. A. Flook
	F. A. Bain
Marketing Assistants ...	... J. Fernandes
	J. Gonsalves
	C. Hutchinson
	A. U. Massiah
In addition there are ...	... 6 Depot Assistants, Grade I
	13 Depot Assistants, Grade II

INTRODUCTION

THERE was a severe dry season from early January until early June. Whilst such weather was generally favourable for the harvesting of crops and the cultivation and breaking of new land, the yields of some crops, notably sugar, were adversely affected. Except during a fairly pronounced petite careme, rainfall was reasonably well distributed during the latter part of the year which was a good one for market gardening and the production of ground provision.

Due to the long dry season and the general favourable conditions both at planting and reaping, the corn crop harvested towards the end of the year exceeded the record one of 1947, purchases made by the Marketing Board alone amounting to 3,952,629 pounds.

Supplies of labour were generally satisfactory throughout the year except for the usual periodical shortages, chiefly in fishing districts and in areas where large scale construction work has been carried out. Minor strikes in the south-west of Trinidad, affecting coconut estates, again occurred. There is some indication, however, that high labour rates have precluded the employment of gangs adequate to carry out satisfactorily all field operations. In particular, small proprietors experienced difficulty in securing an adequate labour force at the price they could afford to pay. While the complaint of steady deterioration in the standard of work given by the casual employee is widespread, the steady increase in the use of mechanical equipment by peasant farmers, notably in the rice and sugar cane areas, continues.

Most noteworthy are the conclusions of the Economic Adviser in his Economic Survey of Trinidad and Tobago for the year 1952. In this, he estimated, on the basis of all known facts, the relative importance of each of the sectors of productive activity in the territory. He has pointed out that the incomes of the inhabitants of Trinidad and Tobago are derived at present from the following economic activities, in order of importance:—

(i) petroleum;

(ii) agriculture (including forestry and fisheries);

(iii) industries (including asphalt);

in addition to which there are the services of various kinds which provide incomes to those employed in them.

He has exposed the fallacy of assessing the importance of any industry on the basis of comparison between total values of trade figures for exports, on which basis petroleum would appear to be by far the most important activity with agriculture only a distant second. A comparison, however, based on the total values of the outputs of each industry which, in the case of

agriculture includes all produce for home consumption, shows the position in its proper perspective and he concludes, as a generalisation, that so long as there is no break in present agricultural prices, it will probably soon be not much wide of the mark to regard petroleum and agriculture as equal pillars in the economy of Trinidad and Tobago.

Regarding export crops, the total figures for 1952 were broadly equal though actually almost $2,000,000 less than in 1951. In 1952, cacao was substantially down in value, due to a short crop, but this reduction was offset by the increase in values for sugar and for copra and copra products (due to a bumper crop coinciding with favourable price arrangements negotiated under the British West Indies Oils and Fats Agreement). In total activity agriculture in Trinidad and Tobago probably marked a moderate increase in 1952 over 1951.

AGRICULTURAL POLICY

The recommendations of the Agricultural Policy Committee continued to be followed and during the year the energies of the Department were particularly directed towards the active implementation of the recommendations contained in the Interim Report of the Local Food Production Committee. (Council Paper No. 46 of 1951.) As in my report for 1951, these are reproduced below and brief notes are included which indicate the action which has been taken. Reference to subsequent sections of this report will provide information in greater detail.

General

(1) *Optimum use of the land for the purpose to which it is best suited, to be the basic condition of the measures to be pursued.*

(2) *Increase in local food production to be undertaken as an integral part of a long-term project aimed at placing all phases of local agriculture at the highest sustained potential, while ensuring that, in case of a shipping crisis, adequate food would be available.*

(3) *The agricultural education of the rural population to be a major function of the Extension Division of the Department of Agriculture.*

(4) *Complete self-sufficiency in all respects not being a sound objective, either economically or sociologically, and the increase of exports being essential for maintaining the rising standard of living of the growing population, a proper balance to be maintained between production for local consumption and production for export.*

(5) *The scope of the Agricultural Credit Bank to be widened to enable loans to be issued for fisheries development and for the manufacture or processing of agricultural or fishery products.*

(6) *Controls on the prices of locally-grown foods, of vegetable, animal and fish origin, to be removed; in the case of vegetable products, adequate notice to be given so that growers may produce in anticipation of the date.*

The principle was followed that control would be removed at the period of peak production of the several items.

Price control on all foods of animal origin was removed early in the year. Towards the middle and end of the year, the following other articles were removed from the list of controlled items, bananas, corn, lettuce, fish, turtle and shrimps.

Adequate notice was given in all cases.

(7) *More rigid permanent legislation on Praedial Larceny to be enacted.*

More stringent laws have been drafted and are likely to be placed before the Legislature at an early date.

(8) *Copra to be added to the list of "licensable produce" in the Sale of Produce Ordinance, Ch. 23. No. 17, and the provisions of the Ordinance, especially in respect of dealing in licensable produce only at licensed premises, to be strictly enforced.*

Action on this recommendation has been taken and the proposals will be placed before the Legislature shortly.

(9) *The amendment of Income Tax legislation and/or its application to provide remission of tax for expenditure incurred in the establishment or rehabilitation of new crops and in the repair or construction of buildings for agricultural purposes.*

A special committee was appointed during the year to review and report on this recommendation of the Local Food Production Committee. The special committee has submitted a report in support of the recommendations and the matter is now under active consideration.

(10) *The slaughter of heifers and cows, under ten years of age and not condemned by a Government Veterinary Officer, to be prohibited and the prohibition strictly enforced.*

This recommendation has been implemented.

(11) *A much wider range of responsible persons to be empowered to issue permits for setting fire and their names and addresses to be fully publicised.*

Action has been taken on this recommendation and, as far as the Department of Agriculture is concerned, all Field Assistants of the District Services Division are now authorised to issue permits for setting fire. Their particular concern is the issuing of permits for setting fire to Crown lands leased or rented for agricultural purposes.

(12) *A much wider range of responsible persons to be appointed Members of Fire-Vigilance Committees and Officers of the Agricultural Department to be included in the list in Section* 18 (1) *of Ordinance No.* 11 *of* 1942.

Action has been taken on this recommendation and, as far as the Department of Agriculture is concerned, senior officers of the District Services Division are members of all County Fire-Vigilance Committees.

(13) *Legislation to be enacted which will provide for a wider range of bodies to be registered than that permitted under the existing Co-operative Ordinance which only provides for Agricultural societies (fishermen's co-operatives, for example, being excluded under the present law).*

The Co-operative Societies Ordinance, 1952, which came into force in June, 1952, permitted of the registration of all types of co-operative societies.

From the date of coming into force of this Ordinance until the end of the year, six (6) fishing co-operative societies and two (2) marketing societies were registered.

(14) *Measures to be taken to enforce the existing legislation in regard to the sizes of mesh used in fish nets and seines.*

Such draft legislation is under consideration by Government.

(15) *The existing legislation on the rental of agricultural land which, as now worded and interpreted, discourages private proprietors from renting lands, to be reviewed and amended so that unused land may be more readily rented for short periods.*

The necessary provision was made under the Small Agricultural Holdings Ordinance in June, 1952, and was published as Government Notice No. 92 of 1952.

(16) *Authority to be conferred upon the appropriate officer of Government empowering him to limit the importation of "white" or "Irish" potatoes at periods of maximum production of local starchy foods.*

Such legislation is under consideration by Government.

(17) *Limitation of the movement of animals to and from Tobago, except insofar as may, at times, be required as a quarantine measure, to be entirely removed. (Tobago should be regarded as an integral part of the Colony analogous to Cedros and no more remote).*

The only restriction on the movement of animals between Tobago and Trinidad is applied to cattle, principally female, for which there is a monthly export quota of ten breeding females. There is almost unrestricted movement of male cattle, with the exception of those under a certain weight.

(18) *The rebate of the tax on gasolene, which is now restricted to the operation of tillage, to be extended to those of weeding, underbrushing, harvesting (including forage harvesting), binding and threshing, but not haulage, and to the fuel used by the engines of commercial fishing craft.*

This recommendation is still receiving consideration by Government.

(19) *The policy in regard to Crown lands should be one of orderly and progressive development based on the following general principles:—*

(i) *Lands to be used for the purpose to which they are best suited;*

(ii) *Lands to be leased and not sold;*

(iii) *Leases to be of a probationary type at first, to be followed, if the tenant prove satisfactory, by a long-term renewable lease;*

(iv) *All leases to embody an approved and agreed-on programme of work and development; the execution of which will be a condition of continued tenancy;*

(v) *The rate of alienation to be strictly co-ordinated with the Staff available for inspection, both initial and periodic, recording, mapping, &c.;*

(vi) *Shifting cultivation to be avoided and emphasis placed on permanent long-term residential occupation;*

(vii) *Size of holding to be such that, as a minimum, wholetime occupation be provided for the lessee.*

A document giving directions on the policy and procedure for lease or rental of Crown lands for agricultural purposes, embodying all the above recommendations has been issued by the Honourable Minister of Agriculture and Lands, following the approval of Executive Council. This policy is being actively implemented and the following table summarises the extent of the lease or rental of Crown lands outside existing land settlement schemes, on agreed programmes of work. The figures quoted are from the 1st July, 1950, and take into account all probationary agreements which have been recommended by this Department since such agreements were brought into force.

TABLE I—CROWN LANDS RECOMMENDED FOR 25-YEAR LEASE OR PROBATIONARY AGREEMENT—JULY 1950-DECEMBER, 1952

	No.	Total Acreage A. R. P.
Recommended and executed		
(*a*) 25-year leases	2	25 0 09
(*b*) Probationary Agreements	54	524 0 37
Recommended and awaiting execution		
(*a*) 25-year leases	25	577 3 07
(*b*) Probationary Agreements	123	1,208 2 29
TOTAL	204	2,335 3 02

(20) *Where land is available in the vicinity of towns or large villages, a limited number of allotments to be made available for employed workers who wish to grow their own food.*

This principle is incorporated in the document referred to in (19) above and this policy is being implemented.

(21) *Private interests to be encouraged to bring the maximum acreage into cultivation by action under the following recommendations:*

Acceleration of Cacao Rehabilitation	— *See* (46).
Income Tax Concessions	— *See* (9).
Removal of Price Controls	— *See* (6).
Control of Praedial Larceny, and Amendments to the Control of the Rents of Small Agricultural Holdings Ordinance	— *See* (15).

(22) *The Land Settlement plan for the next five years to be pursued, care being taken to equate land settlement projects to the Agricultural Staff available for supervision, it being beyond the slightest doubt that such projects can only succeed where strict enforcement of the best agricultural practices prevails.*

Financial assistance has been provided by Government for the maintenance of existing land settlements, under leasehold tenure, which occupy about 2,733 acres, containing 1,803 holdings, of which 290 are now available. During the year funds were also provided to assist in the development of 8 new settlements and extensions occupying about 3,000 acres which will accommodate about 360 families. A grant of $500,000 from Colonial Development and Welfare funds was provided to carry out the major part of this new development.

The greatest care is being taken to provide adequate supervision on the new projects in accordance with the policy stated above.

During 1952 shortage of staff was a definite limitation to progress but it is hoped that there will be material improvement in the position before the middle of 1953.

(23) *The wage-earning public, as distinct from professional farmers, to be encouraged by propaganda and advice to utilise their backyards and gardens for growing some portion of their food, vegetable or animal.*

A vigorous campaign which included the production of a series of posters and pamphlets, as well as talks on the radio and in the field, was carried out. The response is considered to have been an excellent one and considerable interest was shown by the public. The dissemination of such propaganda and advice is a regular feature in the work of the field staff of this Department.

(24) *Government Departments and Private Occupiers to be encouraged to plant trees which produce some sort of food (breadfruit, mango, coconut, &c.) on all idle land and when, for purposes of controlling soil erosion, or for windbreaks, shade, &c., it is desirable to plant a tree or trees.*

This has been the subject of a directive from the Colonial Secretary to all Government departments which control land on which tree crops can be planted. In addition, programmes of work drawn up for the leasing or renting of Crown lands now call upon tenants to plant a minimum of six (6) breadfruit trees in addition to any other economic crops included in the programme of work.

(25) *Government to accelerate the provision of additional rice lands and the amelioration of drainage and irrigation on existing rice areas, as may be recommended by the Standing Rice Committee.*

United States Bases

(26) These areas were returned to the control of Government with the proviso that the United States Authorities could re-occupy them, in case of emergency, at 48 hours' notice.

Waller Field :

In the Guanapo Valley area some 280 small allotments were laid out for gardeners and some 120 now been occupied. Surveys are being carried out in the Aripo Valley Area for further garden allotments. In the north-west area of the Base, all land under permanent crops has now been surveyed and will be rented out in blocks during 1953.

North Manzanilla :

This area was surveyed and divided up into some 300 holdings varying in size from 4–7 acres. These holdings are all under standing crops, i.e., cacao or coconuts, and are to be rented out during 1953.

Carlsen Field :

A considerable number of squatters are present on this area and, in order to regularise the position, a survey will first be necessary. This is to be carried out during 1953.

An area of some 900 acres, on the Woodford Lodge Estate's boundary, has been leased to that Estate for cultivation of sugarcane by the Estate or by canefarmers and for grazing trials which are to be planned and carried out in co-operation with the Department of Agriculture.

General :

The Forestry Department have assumed control of areas under forest in the Waller Field and North Manzanilla bases.

Short-term agreements which are terminable at 48 hours' notice have been used where any land has been rented out and, in accordance with the agreement made with the United States Authorities, no buildings are to be erected on these base lands.

ANIMAL HUSBANDRY

(27) *Government to invest* $450,000 *in the purchase and erection of a building and plant for converting citrus waste into a stockfeed ingredient.*

Funds have been made available to the Co-operative Citrus Growers' Association for the purchase of the necessary plant and erection of the building. It is expected that this should be in operation in 1954.

(28) *The Department of Agriculture to suspend the sale of female stock (more especially cows) for one or two years so as to increase its herds permanently, thus ensuring a marked increase in the numbers offered for sale, annually, thereafter.*

This recommendation is being implemented and sales are being confined almost entirely to culls and otherwise undesirable types.

(29) *The Department of Agriculture to purchase* 25 *buffalo heifers, locally, and from abroad,* 200 *cows,* 100 *sows,* 100 *ewes,* 100 *does and* 300 *hens, for the production of increased numbers of progeny for sale to the public.*

Purchases of imported breeding stock were 106 cows; 75 ewes; 45 does. The purchases on pigs were deferred to 1954 due to the unsettled situation of Foot-and-Mouth Disease in the United Kingdom.

(30) *The Department of Agriculture to add three Junior Livestock Inspectors to its Staff and to take measures to enforce strictly the regulations prohibiting the slaughter of fertile cows.*

This recommendation was implemented; two officers were stationed in Trinidad and one in Tobago.

(31) *The Department of Agriculture to be allocated a revolving fund of* $10,000 *to be used :—*

(i) *for the purchase of fertile cows whose sale for slaughter has been stopped;*

(ii) *for the importation of breeding stock for stockmen who place firm orders.*

In view of the lack of any significant need, these funds were not used.

(32) *Operators of large estates to be invited to grow, as a minimum, the feed needed for their own herds.*

Action, as recommended, was taken.

(33) *The Marketing Board (a) to increase the number of points at which it sells stockfeeds and its publicity in regard to same; (b) to purchase molasses at the rate agreed on for local distilleries (thus ensuring an unlimited supply) and to sell same in its various depots.*

The action taken on (*a*) is referred to at (43). The recommendation at (*b*) has been implemented.

(34) *The Department of Agriculture, or private interests under its control, to test the feasibility of establishing pastures on the less fertile soil types of the former American Bases (when Government shall have received recontrol of same) and to make recommendations on the results of the experiments.*

No action has yet been taken due to shortage of staff.

(35) *The Department of Agriculture to be provided with an additional Veterinarian.*

(36) *Veterinarians of the Department of Agriculture to undertake private work, on a fixed scale of fees, on farm animals (domestic pets excluded) located more than 20 miles from the home of an active private Veterinarian, and to pay the fees earned into Revenue.*

(37) *Government Veterinarians, undertaking private practice, to be paid a fixed non-pensionable allowance and provided with a revolving fund of $500 for drugs.*

The services of the additional Veterinarian were provided. Recommendations were submitted for the implementation of private practice by Veterinarians of the Department but these were not finalised before the end of the year.

(38) *The Department of Agriculture to establish six additional breeding units in 1952, and to be allowed to let out their construction on contract.*

Work on breeding units at Balmain (Couva), Princes Town, Charlotteville (Tobago), Northside (between Parlatuvier and Bloody Bay, Tobago) and Coryal (St. Andrew) was started though not completed, in every case, before the end of the year. The sixth unit will be constructed on Tournebride Estate, Mayaro, during 1954.

(39) *If two milk processing plants are to be established in the Colony, consideration to be given to one of them being set up in Tobago.*

No action, so far, has been taken on this recommendation.

(40) *Funds to be provided for the expansion and modernisation, in stages, of the stockfeed mixing plant at St. Joseph.*

Funds have been provided and modernisation of the plant is being undertaken.

(41) *The Cocoa Board to be invited to accelerate rehabilitation by :*

(i) *Erecting more propagating units (with a capacity of* 5,000 *plants upwards) on private lands;*

Four new estate propagators of a capacity of 10,000 plants each per annum were constructed during 1952.

(ii) *Increasing the percentage of the total area eligible for rehabilitation grants beyond the* 10 *per cent. now allowed.*

The area eligible for rehabilitation has been increased from 10 per cent. to the total area suitable for the planting of cacao.

(iii) *Substantially increasing the amount of* 10 *cents per plant at present allowed per tree planted in areas in excess of those eligible for a full rehabilitation grant.*

Approval retrospective to 1952 has been given to this recommendation and the amount increased to 30 cents per plant.

(iv) *Importing banana plants for sale to peasant growers.*

Some 10,000 Lacatan banana suckers were imported from Dominica and were distributed to the La Pastora Propagating Station, the Central Experiment Station, El Reposo and Rio Claro Demonstration Stations as well as to a few private estates for the production of planting material for sale. Further importations are planned for 1953.

(42) *The Department of Agriculture to increase its area under local foodcrops, at the Central Experiment Station and the Demonstration Stations, by* 70 *acres for the provision of planting material for sale.*

(43) *The Marketing Board to increase and expand its depots and activities as well as its propaganda in regard to :*

(i) *The sale of seeds, planting material, fertilisers, insecticides and cartridges ;*

(ii) *The purchase of food in areas of high production and its resale in areas of low production.*

There were very definite increases in the sales of these items and fuller details are given in the section of this report which deals with Marketing and Fisheries. Grain storage was increased to take an additional 2,160,000 lb., two new depots were opened and new truck routes were established to facilitate both the sale of seeds and other requirements in the remoter districts and the purchase of food supplies. Such purchases in areas of high production and resale in areas of low production remain the basic policy of the Marketing Division.

(44) *The Marketing Board intensively to publicise its guaranteed minimum prices for locally-grown foods, revising the figures annually and keeping them as high as market conditions may permit, and to offer short-term maximum guarantees when conditions warrant.*

Action was again taken during the year as indicated and the prices fixed during July were as follows:—

Pigeon peas, dry shelled	12 cents	per lb.
Black-eyed peas, dry shelled ...	12 cents	do.
Soya beans, dry shelled	12 cents	do.
Corn, dry shelled	6 cents	do.
Yams—Lisbon variety only ...	4 cents	do.
Sweet potatoes	3 cents	do.
Tannias	4 cents	do.
Eddoes	1 cent	do.
Adlay, dry threshed grain ...	5 cents	do.
Sesame (or Bene)	12 cents	do.
Plantains—Fingers	4½ cents	do.
Do. —Stems	4 cents	do.
Bananas —Gros Michel and Sucrier	1½ cents	do.
Do. —Governor	1 cent	do.

(45) *The Department of Agriculture to consider, in the light of results obtained from a drive now in progress in Tobago, the advisability of purchasing a stock of guns and organising drives against vermin and crop-destroying birds in specific areas and at specific times.*

A successful drive against Yellow Tail birds was carried out in Tobago. This was organised by the Agricultural Officer and members of the staff who obtained assistance from persons who owned guns.

The cost of the drive included the purchase of three guns and the cartridges used and resulted in the destruction of 3,380 birds for a total of $566.00, or approximately 17 cents per bird.

The question of purchasing further stocks of guns and organising drives against vermin is still under review.

(46) *The Forestry Department to increase the area of Government teak plantations by 200 acres a year with a view to a permanent addition (2,000 acres in 10 years) to the country's capital assets and an increase in annual food production, the new lands to be split up between two to three zones.*

This recommendation is being actively implemented.

Fisheries

(47) *Proposed legislation for organising, assisting and controlling the Fishing Industry to be enacted, but provision for loans to be excluded therefrom (loans, as distinct from grants, should be dealt with through the established lending agency of the Agricultural Credit Bank).*

(48) *Additional depots and refrigerated trucks to be equipped by the Marketing Board for its important function of distributing and marketing fish.*

Plans and estimates for a cold storage plant for fish in Port-of-Spain are being actively studied.

(49) *The appointment of a fully-qualified Fishery Officer, and his equipment with the means of studying the various aspects of the industry and improving the techniques of fishermen, to be accelerated.*

A fully qualified Fishery Officer has been appointed and is due to arrive in 1953.

(50) *The organizations investigating the possibility of introducing modern techniques to the local fishing industry to be given every possible facility.*

This recommendation has been implemented and trawlers were engaged during the year on surveys and commercial fishing operations. Further details are provided in a later section of this Report.

Loans Administered through the Agricultural Credit Bank

(51) *The sum of* $2,115,000 *to be provided for augmenting the lending activities of the Bank.*

During the year the lending facilities of the Bank were augmented by an additional $1,320,000, thereby increasing the Bank's capital from $2,450,000 to $3,750,000 for investment on mortgages, crop advances and loans to co-operative credit.

AGRICULTURE IN THE COLONY

General Conditions

2. The annual rainfall for a number of selected stations throughout the Colony and the monthly means for 1952, as well as for a 20-year average, are given in Tables II and III. These data have been kindly supplied by the Hydrologist of the Works and Hydraulics Department.

Table II—Annual Rainfall, Trinidad and Tobago

Station	Total 1952, inches	21-Year Mean, inches
North Trinidad		
River Estate, Diego Martin	70.34	81.47
St. Clair, Port-of-Spain	80.13	68.88
La Pastora, Santa Cruz	66.53	87.71
I.C.T.A., St. Augustine	64.21	71.55
Meteorological Station, Piarco	54.56	72.41
Frederick Estate, Caroni	48.09	74.71
Torrecilla Estate, Arima	87.17	—
Works and Hydraulics, Toco	45.24	79.75
Hollis Reservoir, Valencia	87.82	126.75
Sans Souci Estate, Sangre Grande	84.95	—

TABLE II—ANNUAL RAINFALL, TRINIDAD AND TOBAGO—*Contd.*

Station	Total 1952, inches	21-Year Mean, inches
Central Trinidad		
Waterloo Estate, Waterloo	57.19	68.34
Todds Road Estate	58.69	77.58
Tamana Teak Plantation	96.37	119.62
McBean Estate, Couva	52.06	66.63
Forres Park Estate, Claxton Bay	53.66	61.52
New Lands Estate, Biche	92.06	115.37
Marper Farm, Manzanilla	83.72	104.12
Brasso Tamana	*67.49	*100.74
Cocal Estate, Nariva	66.70	—
South Trinidad		
Brothers Estate, Williamsville	52.29	83.51
Usine Ste. Madeleine, San Fernando	68.15	75.32
Perseverance Estate, Cedros	52.05	59.53
Poole Syndicate, Rio Claro	84.38	110.92
Navet C.M. School, Rio Claro	100.65	—
Point Fortin Filtration Plant	57.44	86.26
T.L.L., Barrackpore, Penal	51.69	74.59
Mayaro Police Station, Mayaro	58.63	94.39
Moruga Police Station, Moruga	56.77	71.48
T.L.L., Guayaguayare	81.81	83.63
Siparia Old Road, Fyzabad	60.50	65.15
Tobago		
Botanic Gardens	50.52	85.73
Government Farm	47.42	73.15
Friendship Estate	44.61	—
Hermitage Estate	67.36	96.02
Green Hill Estate	62.71	—
Kendal Estate	103.56	—

*No records available for May-June

TABLE III—MEAN MONTHLY RAINFALL, TRINIDAD AND TOBAGO

Month	1952, inches	21-Year Mean, inches
January	2.06	6.04
February	1.68	4.96
March	5.44	2.96
April	3.42	3.27
May	3.73	5.74
June	5.25	12.27
July	7.38	9.88
August	7.75	11.15
September	7.09	6.63
October	4.18	6.73
November	4.03	8.25
December	7.41	8.83
TOTAL	59.42	86.71

3. There were further increases in wages in all the agricultural industries by private enterprise as well as Government. At the beginning of the 1952 crop, the wages of all day, time and task workers in the sugar industry were increased by 19 per cent. on the 1949 rates. This made the total increase on the 1949 rates 44 per cent., i.e., 12½ per cent. in 1950, 12½ per cent. in 1951 and 19 per cent. in 1952.

Agricultural Products for Home Consumption

Crops

4. Weather conditions during 1952 were generally favourable for the production of ground provisions, market garden crops and particularly maize. As a result of the long dry season and the generally favourable conditions both at planting and reaping, the corn crop reaped towards the end of the year exceeded the record for 1947.

5. In general there was a substantial increase in the acreage planted in ground provisions although, due to the dry conditions, yields were frequently lower than usual. Supplies, however, were generally adequate throughout the year.

6. Yields of pigeon peas harvested in the early part of the year were generally poor due to shortages and poor planting material resulting from the very wet weather during 1951. Planting during 1952, however, was extensive and the crop has been a good one. The long dry season was particularly favourable for the production of peas and beans in the lagoon areas.

7. Mortality among earlier planted market garden crops in some areas, particularly tomatoes, due to unfavourable weather, was high but in general where water was available, conditions were extremely favourable and there was a general increase in planting and supplies both in Trinidad and Tobago. This was particularly so in the lagoon areas where large crops of water melons, bodi, okra and egg plant were reaped.

8. The Grow More Food Campaign and the departmental leaflets distributed resulted in a definite increase in the number of backyard gardens and, it is considered, an improvement in the existing ones.

9. A negligible ratoon crop of rice was reaped in a few areas during March and April. Preparation of the land for the main crop started in April and the long dry season permitted extensive work to be done. Transplanting, however, was hindered in some areas by lack of sufficient water and, as a result of this, subsequent weeding was heavier than usual.

10. An average crop of hill paddy was sown and reaping started in October. Reaping of swamp paddy was done in November to December and satisfactory yields were obtained.

Livestock

11. *Supply of Feeding Stuffs.*—During the first half of the year corn was not available and was imported from British Honduras. However, in the latter half, favourable weather conditions and the assurance of a guaranteed price were responsible for a record crop. The supply of rice husks was less than in 1951 which was mainly due to the increased use of this product by peasants as a stock feed. Cotton seed meal was obtainable and supplies of molasses were sufficient both for the preparation of stock feeds and for sale at certain depots by the Marketing Division.

12. *Meat and Milk Production.*—Complete and accurate data is not available for meat production and slaughter figures are confined to Municipal and Government-controlled abattoirs. These show that 24,340 cwt. (1,217 tons) of beef and veal and 13,520 cwt. (676 tons) of pork were slaughtered. Similarly, complete production figures for fresh milk are not available, but returns from the larger dairies show that they handled 31,897 gallons per month.

13. *Importations.*—The animal imports are listed in Table IV.

TABLE IV—ANIMALS IMPORTED INTO TRINIDAD, 1952

Type	Source	No.	Total
	Animals for Slaughter		
CATTLE	British West Indies	330	330
GOATS	British West Indies	5,021	5,021
SHEEP	British West Indies	3,440	3,440
SWINE	British West Indies	3,286	3,286
	Animals for Breeding and Work		
CATTLE	British West Indies	159	159
GOATS	British West Indies	46	46
SHEEP	British West Indies	116	116
SWINE	British West Indies	1	1
HORSES	United Kingdom	33	
	Eire	3	
	Canada	8	
	British West Indies	27	71
ASSES	British West Indies	28	28
MULES	United States of America	186	
	British West Indies	13	199

14. The imported fresh meat supply of the Colony was chiefly from New Zealand and Australia in the form of frozen meat and is summarized as follows:—

Fresh, chilled or frozen beef and veal

Country	*cwt.*	*cwt.*
Canada and Newfoundland ...	23.56	
Australia	13,020.46	
New Zealand	22,383.8	
Antigua	90.33	
United States of America	20.11	
Argentine	53.57	
Denmark	.5	
Uruguay	1,393.	
Curaçao	.125	36,985.45

Fresh, chilled or frozen mutton and lamb

Country	*cwt.*	*cwt.*
Australia	112.32	
New Zealand	5,531.30	
United States of America	19.34	
Argentine	5.35	
Uruguay	8.76	5,677.07

Fresh, chilled or frozen pork

Country	*cwt.*	*cwt.*
United Kingdom	21.41	
Australia	273.06	
British Guiana	46.57	
New Zealand	3,899.56	
Argentine	33.74	
Netherlands	.46	4,274.80

Apiculture

15. There were 219 registered apiaries at the close of the year with a total of 2,219 colonies. Weather conditions were favourable for honey production and in most areas good yields were obtained. Production returns for the year were 129,493 lb. of honey and 2,669 lb. of beeswax.

16. *Exports.*—During the year two further exporters of honey were registered and 17,685 lb. of honey were exported.

17. *Diseases and Pests.*—There were no cases of disease found in the colonies inspected but during the wet season some beekeepers suffered some damage from the Wax Moth (Galleria Millonella); as far as possible the infected material was collected and destroyed to prevent further spread of the pest.

Agricultural Exports in 1952

18. There was a drop of almost $2,000,000 in the total value of exports of agricultural products in comparison with those of 1951. Due to a short crop, the value of cacao exports was substantially lower than in 1951 and, as will be seen from Tables V and VI, there were other relatively minor decreases in the export values of certain items. These decreases, however, were largely offset by the increase in the values for sugar, due to higher prices under the Commonwealth Sugar Agreement, and by an excellent coconut crop coinciding with favourable price arrangements negotiated under the B.W.I. Oils and Fats Agreement. Figures showing total values for the past five years are as follows: —

Year	*Total Value*
1948	$26,806,254
1949	28,376,869
1950	33,737,832
1951	38,458,508
1952	36,459,058

19. The quantity and value of the various agricultural exports are shown in Tables V and VI, the data for which were kindly supplied by the Government Statistician.

Table V—Agricultural Exports, Trinidad and Tobago, 1952

Item	Quantity	Value	Value
		$	$
Sugar and By-Products			
Sugar (unrefined) ... ...tons ...	114,368	19,431,091	
Sugar (refined) ... ...lb. ...	312,456	36,154	
Molasses, inedible (raw) ...cwt. ...	339,480	430,567	19,897,812
Cacao			
Beans ... ...cwt. ...	125,780	8,237,141	
Butter ... ...lb. ...	2,230	2,481	
Powder ... ... ,, ...	6	6	8,239,628
Citrus			
Lime juice (raw) ... ...liq. gal. ...	4,485	7,471	
Lime Juice (concentrated) ... ,, ...	75	468	
Limes, Fresh ... ...lb. ...	14,957	2,264	
Grapefruit, Fresh ... ... ,, ...	6,144,394	399,473	
Oranges, tangerines and mandarines ... ... ,, ...	2,114,706	150,421	
Canned Grapefruit Juice ...liq. gal. ...	571,954	624,384	
Canned Orange Juice ... ,, ...	92,173	163,106	1,347,587
Tonca Beans			
Tonca Beans ... ...lb. ...	12,983	22,438	22,438
Rubber			
Rubber, raw ... ...lb. ...	206,596	102,819	102,819
Coffee			
Coffee, raw ... ...cwt. ...	16,523	1,433,875	1,433,875
Carried forward			

TABLE V—AGRICULTURAL EXPORTS, TRINIDAD AND TOBAGO, 1952—CONTD.

Item	Quantity	Value	Value
		$	$
Brought forward ...			
Coconuts and Derivatives			
Coconut oil, unrefined ...lb. ...	3,570,693	853,031	
Coir fibre ... ... ,, ...	269,620	20,754	
Copra ... ... ,, ...	56,044	866,899	1,740,684
Vegetables			
Vegetables, Fresh and dry ...lb. ...	560,942	119,180	119,180
Beans and Peas, Lentils, &c. ,, ...	550	118	118
Fresh Fruit, Other sorts			
Fresh Fruit, other sorts ...lb. ...	487,364	83,793	83,793
Bananas ... ... ,, ...	2,982,268	136,668	136,668
Livestock and Hides			
Live animals, chiefly for food ...	—	4,565	
Live animals other than for food	—	125,261	
Hides ... ...lb. ...	98,750	15,219	145,045
Honey			
Honey, refined ... ...lb. ...	22,300	5,106	5,106
Milk			
Milk and cream, fresh ...lb. ...	67,104	10,277	10,277
Spices			
Nutmeg ... ...lb. ...	30,405	9,409	
Mace ... ... ,, ...	425	203	
Other spices ... ... ,, ...	2,564	1,302	10,914
TOTAL VALUE			$33,295,944

TABLE VI—EXPORTS OF MANUFACTURED AGRICULTURAL PRODUCTS, TRINIDAD AND TOBAGO, 1952

Item	Quantity	Value	Value
		$	$
Sugar and By-Products			
Rum ... ...proof gal.	251,825	991,538	
Syrup ... ...lb. ...	28,167,459	369,456	1,360,994
Citrus			
Lime oil (distilled) ... ...lb. ...	5,789	73,795	73,795
Coffee			
Coffee (prepared) ... ...lb. ...	28,706	33,856	33,856
Coconuts and Derivatives			
Coconut oil (refined) ...lb. ...	1,568,368	454,020	
Margarine (animal, vegetable or mixed) ... ...lb. ...	226,379	100,485	
Lard Substitute ... ...lb. ...	182,969	79,970	634,475
Soap			
Stock Soap ... ...lb. ...	97,343	19,035	
Hard Soap ... ...lb. ...	1,494,298	294,136	313,171
Bitters			
Bitters ... ...liq. gal. ...	66,304	726,217	726,217
Jam, Marmalade and Fruit Jellies			
Jam, Marmalade and Fruit Jellies ... ...lb. ...	11,551	3,588	3,588
Wine			
In bottle ... ...liq. gal. ...	4,147	8,323	
In wood ... ... ,, ...	7,404	8,695	17,018
TOTAL VALUE			$3,163,114

Sugar

20. The total quantity of sugar produced in 1952 was 137,358 tons. This was 3,310 tons less than the 1951 production of 140,668 tons and 21,777 less than the amount produced in the peak year 1949. The heavy rains during the 1951 crop created a condition where a large amount of damage was done to the cane stools during reaping that year, and this, together with the complete lack of rain throughout the whole of the 1952 grinding season, was chiefly responsible for this drop in production which was over 25,000 tons below the estimate made immediately before crop commenced.

21. The final crop figures, compared with the previous year, were as follows:—

TABLE VII—TRINIDAD CROP STATISTICS

	1952	1951
Estates' canes ground, tons	966,363 (73.13%)	945,634 (66.00%)
Farmers' canes ground, tons	355,081 (26.87%)	487,099 (34.00%)
Total canes ground, tons	1,321,444	1,432,733
Sugar output	137,358	140,668
Tons cane per ton sugar	9.62	10.19
Estates acreage reaped	34,657	28,316
Average cane yield per acre (estates), tons	27.88	33.40
Estimated tonnage Standover canes:		
Estates	—	103,150
Farmers	200	25,602
Price of Farmers' canes per ton ...	$10.86	$7.99

22. As in recent years, the local consumption quota was fixed at 23,000 tons of sugar which includes sugar used in the manufacture of products for export. The price of all grades of local sugar was increased by 1 cent per lb. on the 1st February, 1952.

23. The rate of shipping remained the same as in 1951, the last consignment being lifted in early August. The experiments in shipping sugar in bulk were extended to the Port-of-Spain Wharf, and all sugar manufacturers now have some experience of shipping by this method. Out of a total quantity of 114,368 tons shipped, 53,850 tons were shipped in bulk. At the request of the Ministry of Food, to whom all export sugar is sold, 5,000 tons of sugar were shipped to New Zealand. Of the remainder, 24,668 tons were shipped to Canada and the balance to the United Kingdom.

24. Froghopper attacks were experienced during the latter part of the year, and control measures were taken. Sugar companies are doing everything possible to eradicate this pest.

25. As a result of the application of the price formula under the Commonwealth Sugar Agreement, the price for export sugar of the 1953 crop negotiated price quota was increased by £3. 16s. 8d. making the price of export greys £42. 6s. 8d. per ton c.i.f. The Trinidad negotiated price quota is fixed at 124,578 tons.

Cacao

26. The crop was below expectations and the total exports (14,087,360 lb.) were substantially less than those (19,316,649 lb.) of 1951. The dry conditions obtaining during the first five months of the year facilitated picking and curing but the variable weather in the latter half of the year led to a fairly high incidence of Black Pod which resulted in losses and in the very late setting of the succeeding crop.

27. With continuing good prices, interest in maintenance operations and clearing of abandoned estates has been sustained. Increased attention has been paid to rehabilitation under the Cocoa Subsidy Scheme.

28. Exports and value of raw cacao for the last five years were as follows:—

TABLE VIII—EXPORTS AND VALUE OF RAW CACAO, TRINIDAD AND TOBAGO

Year	Exports	Value
	lb.	$
1948	18,285,605	8,353,312
1949	12,831,728	4,519,207
1950	16,197,928	8,360,678
1951	19,316,640	11,563,270
1952	14,087,360	8,237,141

Coconuts

29. As will be seen from Tables V and VI, the total value of exports of coconut derivatives was $2,375,159, nearly four times the 1951 figure of $621,181.

30. The 1952 crop was an extremely good one and prices were favourable as a result of the B.W.I. Oils and Fats Agreement. As a result, there has been steady development in the maintenance, extension and rehabilitation of plantations and the use of mechanical equipment in maintenance operations continues to expand.

31. The incidence of disease, particularly Red Ring, has increased in some areas. This is dealt with in a later section of this Report.

Citrus

32. The 1951–52 crop continued into March and was a fair one, considering the adverse effect of the wet weather during the first half of 1951. The prolonged dry season of 1952 had a good effect on the 1952–53 crop of all classes of citrus.

33. The acreage planted to grapefruit and oranges continued to expand, due mainly to replacement of cacao under the Cocoa Subsidy Scheme.

34. The value of exports of citrus products dropped slightly from $1,479,361 in 1951 to $1,347,587 in 1952.

35. The Citrus Growers' Association produced 340,959 cartons of juice and exported 69,023 cases of fresh fruit. Of the juice produced, 80,635 cartons were sold locally and 242,847 were exported.

36. Orange and grapefruit cultivations remained in healthy condition and there is continued extension at an estimated rate of 400–500 acres per annum.

37. The distinct trend in planting oranges rather than grapefruit, which was recorded last year, continues.

38. Epidemic dying out of limes continued but there appeared to be a general reduction in its rate, possibly due to the prolonged dry season, and healthy trees gave good yields. In Tobago, the lime crop was a good one and reached almost 3,000,000 pounds. But for the drop in prices (by 50 per cent.), it is considered that this figure would have been doubled.

39. Oil production in Tobago was 9,350 lb.

Other Crops

40. *Coffee.*—The good prices (Robusta—68 cents per lb. and Arabica —74 cents per lb.) for coffee have encouraged appreciable planting, particularly under Robusta, and there was a general improvement in the maintenance of existing plantations. The export value of coffee products increased from $1,042,367 in 1951 to $1,433,875 in 1952.

41. *Bananas.*—The exports of bananas fell off considerably and only 50,039 stems were shipped, as compared with 83,305 stems in 1951. Export values fell accordingly from $225,902 to $136,668.

42. *Rubber.*—Raw rubber exports dropped from $190,918 in 1951 to $102,819 in 1952.

WORK OF THE DEPARTMENT OF AGRICULTURE

43. Fluctuations in the staff available continued, and the Extension Services remained the division which was most affected. Recruits to the subordinate staff are being posted for short periods to all divisions and stations of the Department in rotation, during the first year after appointment, in order to gain experience. Several officers were again away attending courses at Universities.

44. This section of the report summarises the activities and achievements of the Department of Agriculture. Fuller details, in unpublished reports of individual officers, are available and enquiries regarding any particular aspect of the work will be welcomed.

Extension

45. The Department's Extension Division offers the following services:—

(*a*) General advice to the public on agriculture;

(*b*) Inspection visits to school gardens for advice and judging in connection with the Annual Competition;

(*c*) Supervision of over 10,000 acres of food gardens;

(*d*) Inspection of Crown lands and interviews with applicants requesting leases for agricultural purposes;

(*e*) Assistance and support to agricultural organizations, agricultural exhibitions and livestock shows;

(*f*) Supervision for the district breeding units;

(*g*) Supervision and management of district demonstration stations;

(*h*) Parasol ant nests destruction on Crown lands;

(*i*) Plant Protection Service.

46. In addition, it collects data for Crop Surveys and any information from the districts required by the Agricultural Department.

47. District demonstration stations are maintained at Sangre Grande, Rio Claro and Penal, and at Louis d'Or in Tobago. The objects of these stations are:—

(*a*) to ascertain a suitable system of mixed farming for application to peasant agriculture;

(*b*) to demonstrate methods of crop production and livestock management which the peasant can copy;

(*c*) to be a centre for the distribution of seed, planting material and stock;

(*d*) to be the local headquarters of the Agricultural Department.

48. Disposal of livestock and crops, mainly from demonstration stations in the District Services Division at El Reposo (Sangre Grande), Rio Claro, Penal and Louis d'Or, Tobago, for breeding or planting purposes and for consumption is shown in Table IX.

Table IX—Disposal of Livestock and Crops from Demonstration Stations, 1952

	Consumption	Planting or Breeding
Livestock		
Pigs	11	123
Goats	3	10
Rabbits	55	161
Cattle	6	1
Poultry	48	161
Livestock Products		
Milk	8,949 lb.	—
Pork	468 lb.	—
Eggs	7,177	3,072

TABLE IX—DISPOSAL OF LIVESTOCK AND CROPS FROM DEMONSTRATION STATIONS, 1952—*Continued*

	Consumption	Planting or Breeding
Crops		
Coconuts	71,405	—
Cocoa	11,088 lb.	—
Coffee	100 lb.	—
Limes	321 lb.	—
Grapefruit	44,920	—
Oranges	23,615	—
Bananas	12,054 lb.	—
Plantains	4,595 lb.	—
Maize	12,363 lb.	4,028 lb.
Rice	220 lb.	24,514 lb.
Yams	8,009 lb.	4,592 lb.
Tannias	609 lb.	574 lb.
Dasheen	2,401 lb.	—
Eddoes	432 lb.	—
Cassava	9,621 lb.	—
Cassava cuttings	—	11,772
Melons	22,060 lb.	—
Sweet Potatoes	13,759 lb.	—
Sweet potato cuttings	—	9,070 bdls.
Pumpkins	124	—
Peas	759 lb.	347 lb.
Suckers (plantain and banana)	—	1,908
Vegetables (mixed)	519 lb.	—
Vegetables (fresh)	32,780 lb.	—
Vegetable seedlings	—	102
Vegetable boxes	—	91
Rice seedlings	—	159 (sq. ft.)
Kudzu seeds	—	13 lb.
Fodder grass cuttings	—	51,471
Fodder grass stems	—	2 tons

49. Revenue derived at the District Stations from the sale of livestock and crop products is represented in Table X.

TABLE X—REVENUE FROM DISTRICT STATIONS, 1952

	El Reposo	Rio Claro	Penal	Louis d'Or	
	$ c.	$ c.	$ c.	$ c.	
Stock					
Poultry	50	234 01	23 50	369 32	
Eggs	194 70	395 38	—	261 86	
Animals	939 28	874 00	89 00	2,175 06	
Milk	404 31	135 60	15 06	—	
Crops					
Cacao	1,561 89	567 00	—	3,363 37	
Coffee	59 74	3 30	—	—	
Rice	2 00	9 60	231 37	—	
Fruit	12 76	990 66	—	8 02	
Vegetables	89 90	306 08	1,815 55	501 19	
Ground Provisions	223 21	922 31	3 60	130 78	
Miscellaneous	63 48	126 19	260 95	1,130 03	
Maize	262 32	291 04	87 93	386 13	
TOTAL	3,814 09	4,855 17	2,526 96	8,325 76	($19,521.98)

50. Statistics with respect to the Breeding Units are presented in Table XI.

TABLE XI—BREEDING UNIT ACTIVITIES, 1952

Total Number of Units = 17 (i) Total Number of Stockmen = 19

Animals	Animal/ Months (ii)	Services	Re-services	EXPENDITURE		
				Revenue	Particulars	Amount
				$ c.		$ c.
Bulls ...	250	1,692	579	1,390 50	Transport ...	963 96
Bucks ...	227	975	215	696 82	Incidentals	1,442 92
Boars ...	163	352	44	266 50	Labour ...	20,202 02
Jacks ...	99	171	81	172 80	Stockfeed ...	7,187 90
Rams ...	24	48	6	23 04		
TOTAL ...	763	3,238	925	$2,549 66		$29,796 80

Costs (iii)

Average cost per unit per annum	=	$1,752.75
Average cost of upkeep per animal per annum	=	468.63
Average cost per service	=	8.20

(i) Field Units excluding Government Farms Trinidad and Tobago.

(ii) Sum of the total number of months each sire stood for service during 1952.

(iii) Excluding costs and depreciation of buildings and stock.

CROPS

Cacao

Cacao Subsidy Scheme (Administered by the Cocoa Board).

51. *Principles.*—Variations of the Subsidy Scheme were published during the year which permit the Board to assist cacao planters by offering a manuring subsidy, free fertilisers being available for:—

(i) All clonal cacao planted under clear-felling and rehabilitation methods;

(ii) Seedling cacao in areas rehabilitated to the extent of thirty-five per cent. (35%) or more with clones.

52. The Board approved the interplanting of coffee in old cacao as an alternative crop.

53. The Board approved proposals dealing with:—

(*a*) The increase of plant production to meet current and future estimated demands;

(*b*) The financing of cacao projects at the La Reunion section of the Central Experiment Station, these projects to include Clonal and Fertiliser Trials;

(*c*) The increase of the rate of subsidy payments for the planting of Clonal Cacao;

(*d*) The reorganisation and extension of staff to effect the above proposals.

54. The Board's recommendations on the above were forwarded to Government at the end of the year and have since been accepted.

55. *Rehabilitation.*—A total of 1,981 applications for rehabilitation of cacao have been registered, of which 1,788 have been approved to date. Of this number, 421 applications were received during 1952 and 338 approved. The total of 1,788 approved applications is divided among estates as follows:—

	At end of 1951	*At end of 1952*
Estates under 25 acres ...	899	1,155
Estates 25/50 acres ...	178	218
Estates over 50 acres ...	373	415

56. The clonal variety, I.C.S. 1, still constitutes over 50 per cent. of the clones produced, and I.C.S. 95 about 25 per cent., the balance being I.C.S. 6, 8, 9 and I.M.C. 67. During the year, new nurseries were established on all the Board's stations in order that a more complete mixture may be delivered in the near future. As far as possible, deliveries during the year were made of mixed clones.

57. During the year, 85 applications were received from Tobago.

58. *Replacement.*—A total of 1,982 applications have been received of which 1,692 have been approved to date. During the year under review, 400 applications were received and 317 approved. The total of 1,692 approved applications is divided among estates as follows:—

	At end of 1951	*At end of 1952*
Estates under 25 acres ...	949	1,209
Estates 25/50 acres ...	198	234
Estates over 50 acres ...	228	249

59. During the year, assistance was approved to plant 150 acres of citrus, 294 acres of coffee, 29 acres of other crops; and $1,000.00 was approved for livestock, fodder and pens.

60. During the year one application was received from Tobago.

Clonal and Fertiliser Trials

61. Reference was made in the 1951 report to a series of field experiments which are being financed by the Cocoa Board. These experiments are of three classes:—

(*a*) *Clonal Trials.*—In these the merits of the following 48 clones are being assessed:—

Group I —I.C.S. 1, 6, 8, 32, 39, 40, 43, 46, 47, 48, 60, 61, 75, 79, 84, 89, 95, 98, 100 and I.M.C. 67.

Group II—I.C.S. 9, 22, 37, 38, 45, 85, 95, 73, 16, 91, 53, 70, 87, 35, 49.
S.P. 1,
P. 7, 18,
P.A. 46, 121, 150, 118, 30, 39, 169, 218,
I.M.C. 57 and
E. 660 (27 clones with I.C.S. 95 as a Standard).

The trials have been established at the following sites:—

Estate	*Location*	*Soil Type*
TRINIDAD:		
1. Poole Syndicate	...Rio Claro	...Princes Town Clay
2. El Rosario	... do.	...Talparo Clay
3. Santa Severa	...Brasso ...	...Brasso Clay
4. El Toco ...	...Toco ...	...Calcareous Schist
5. Aretheuse	...Sangre Grande	...Moruga Loam
6. San Francisco	...Mitan ...	...Brasso Clay
7. River Estate	...Diego Martin	...Northern Range Alluvial
TOBAGO:		
8. Demonstration Station	Louis d'Or	...Alluvial
9. Studley Park	... —	...Deorite
10. King's Bay	... —	... do.
11. Campbellton	... —	...Calcareous Schist

(*b*) *Fertiliser Trials* (*Newly planted Clones*).—In these trials all combinations of N.P. & K. are under comparison. Eleven sites, seven in Trinidad and four in Tobago, have been prepared and planted.

(*c*) *Fertiliser Trials* (*Bearing Clones*).—In these trials combinations of N.P. & K. are being applied to bearing clones 5 to 7 years old. Four sites were laid down in Trinidad and one in Tobago.

62. The sum of $40,354.00 was spent on experimental work during the year.

Experimental Spraying of Cacao

63. Investigations to date have been concerned more with testing types of equipment suited to spraying in cacao. During the year the Committee met thrice and purchased a range of available equipment.

64. Although concrete results in the trials carried out have not been obtained, indications are that hand operated Knapsack-type sprayers are not generally suitable.

65. The sum of $5,845.00 was spent on experimental spraying during the year.

Propagation

66. The production efficiency on the Board's stations is set out in the following table:—

	La Pastora		Marper		King's Bay (Tobago)	
	1952	Average	1952	Average	1952	Average
% Rooting	47	65	62	70	60	65
% Loss in hardeners	8	5	7	5	12	10
% Loss in sheds	4	20	7	10	8	15
% Production efficiency	35	45	48	55	40	45

The lower efficiency during 1952 can be attributed to the severity of the dry season which resulted in a lower rooting percentage and to the fact that it is still not possible to obtain all cuttings from "home" nurseries.

67. Trials on Rooting Media, commenced in 1951, showed the Bass Residue from the mechanical extraction of Coconut Fibre gave considerably better returns than were obtained from Washed Sea Sand. In the latter half of the year, considerably higher Rootings were obtained as a result of the replacement of the sand by Coconut Fibre Residue.

68. Open Bin Propagation was continued throughout the year with mixed success; high rootings were obtained when the quality of the cuttings was high. However, considerable difficulty was experienced in "hardening off" the rooted plants. It does not appear that this method is entirely suited to Trinidad conditions, but that it is useful as an auxiliary to the method of Closed Bin Propagation.

69. Single Leaf Material was utilised throughout the year as a means of "Bulking up" scarce varieties; some twenty thousand plants were produced by this method at La Pastora. The method does not appear suited to large-scale production because of the need for rigid supervision. At the close of the year trials were commenced utilising two-leaf or "Mallet" cuttings as the second stage in the Bulking Up process.

Propagating Stations

70. *La Pastora.*—Production in the twelve-month period ending 31st December, 1952, was 288,953 as compared with 255,953 in 1951. This production was obtained with an overall efficiency of 35 per cent. (rooting

47 per cent. as compared with 58 per cent. in 1951). This low figure may be attributed to the scarcity of good quality cutting material and the severity of the dry season.

71. Some 15,228 plants were planted in nurseries during the year. Of these, 11,040 were planted in new nurseries whilst 4,188 were planted in areas in which old nurseries of I.C.S. 1 and I.C.S. 45 had been cut out.

72. An additional twenty acres of land were acquired during the year; preparation work was commenced in November.

73. *Marper.*—Production in the twelve-month period ending 31st December, 1952, was 40,005 as compared with 36,206 during 1951. This production was achieved at an overall efficiency of 48 per cent. (rooting 62 per cent. as compared with 70 per cent. in 1951).

74. Propagation ceased from March to the end of May through lack of water.

75. Two thousand and ninety-seven plants were planted in nurseries during the year. Of these, 1,147 were planted in nurseries from which S.C.A. 6 had been cut out.

76. *King's Bay.*—Production in the twelve-month period ending 31st December, 1952, was 33,288, compared with 35,960 in 1951. This production was obtained with an overall efficiency of 40 per cent. (rooting 60 per cent. as compared with 68 per cent. in 1951). The drop in Production and Efficiency was due to the heavy winds during the dry season. Losses in sheds were high during the year, due to an attack of scale early in the year, no further attacks being noticed after a policy of regular fertilising was adopted.

77. Two thousand seven hundred and sixty-two plants were planted in nurseries at Louis d'Or and King's Bay during the year.

Estate Propagators

78. Four new Estate Propagators (assisted type) of capacity 10,000 plants each per annum, were constructed in 1952. These were: San Jose and Tortuga in the Montserrat District, Cyrnos in Erin District of Trinidad, and Roxborough in Tobago. In addition, the small Propagator at San Juan Estate was expanded to a capacity of 10,000 plants per annum.

79. The cost of construction of these Propagators far exceeded the original estimates. This may be attributed to rising costs and the necessity of utilising a more elaborate design than was originally envisaged.

80. Non-Pareil produced 29,571 plants at an overall efficiency of 55 per cent., the highest efficiency of any station operated by the Board.

81. The difficulties encountered at El Salvador during 1951 have been overcome, largely by the changeover to the use of Closed Bin Propagators.

82. It has been possible to overcome the effects of iron deficiency (resultant from an alkaline water supply) in the Montserrat Propagators by utilising an acidic potting soil from La Pastora along with a programme of regular spraying with Ferrous Sulphate.

83. The new Propagators at Cyrnos, Tortuga and Roxborough Estates commenced successful propagation in the latter half of the year; at San Jose no plants have been produced as a result of a heavy attack of Thrips in November and December.

84. Preparation for separate nurseries was commenced at the sites of all Propagators (except Non-Pareil) during the year and nurseries planted at El Salvador, San Juan, San Jose and Roxborough.

Cost Accounting

85. The following figures show the cost of production of one plant:—

	1951	*1952*
La Pastora	65 cents	76 cents
Marper	81 ,,	69 ,,
King's Bay ...	60 ,,	74 ,,
Non-Pareil	—	27 ,,
El Salvador ...	—	75 ,,

86. The 1952 cost may be broken down as follows:—

	La Pastora	*Marper*	*King's Bay*
	Cents	*Cents*	*Cents*
Labour —Operation	19	15	18
Maintenance	23	17	20
Baskets	10	10	10
Other Materials	15	19	16
Depreciation	08	07	09
Miscellaneous	01	01	01
TOTAL	76	69	74

87. There was a general rise in the cost of production during 1952, partly through rising labour costs, but mainly due to the amount of maintenance work carried out through the year.

Plant Distribution

88. The composition of the clonal mixtures distributed from the Board's Stations were as follows:—

La Pastora		*Marper*		*King's Bay*	
I.C.S. 1 ...	...55%	I.C.S. 1	...15%	I.C.S. 1 ...	...65%
I.C.S. 95 ...	...35%	I.C.S. 95	...55%	I.C.S. 95	...25%
I.C.S. 6 and 8	... 8%	I.M.C.67 and other WB resistant varieties	30%	Others ...	...10%
Other types	... 2%				

89. Of the 375,497 plants distributed during 1952, 300,095 were delivered to planters and 53,743 utilised for nurseries and experimental work.

90. The following figures show deliveries to planters by District and method of planting:—

County	Method of Planting			Total
	Supplies	Complete Replanting	Partial Replanting	
Caroni	4,700	18,728	85,477	108,905
St. Andrew	1,130	40,910	39,104	81,144
St. George	2,190	10,400	15,250	27,840
St. David	1,100	8,110	6,700	15,910
Nariva-Mayaro	1,700	3,700	10,062	15,462
Victoria	2,950	5,600	2,000	10,550
St. Patrick	1,300	10,500	—	11,800
Tobago		Not available		28,484
				300,095

Breeding and Selection of Witchbroom Resistant Clones

91. This work was continued at Marper Station. The first crosses made between immune types and high yielding I.C.S. and South American clones are now in their third year and some have produced their first pods.

92. A total of 653 seedlings have been raised and of these 26 have been selected as having so far shown witchbroom infection; they are being propagated vegetatively for further observation.

Legislation

93. Additional variations to the scheme offered planters a manuring subsidy for their clonal cacao in the form of a free supply of fertilizer annually (Government Notice No. 68 of 1952), and laid down the minimum planting distance of clonal cacao as 64 square feet per plant.

94. The Cocoa Industry Ordinance was also amended (No. 48 of 1952) to empower the Board to delegate authority to the Agricultural Officer, Tobago, to sign Payment Vouchers to be paid by the Warden of Tobago.

95. In Government Notice No. 234 of 1952, an additional variation to the scheme sets out minimum planting distances of clonal cacao.

Central Experiment Station

General

96. Weather conditions were extremely favourable for the performance of both field and capital works; in consequence considerable progress was made in the overall development of the Station.

97. Capital works undertaken during the year included the construction of two cattle byres to house 60 dairy cattle, the construction of a rice storage shed, the laying down of two miles of hard surface roads, the fencing of 40 acres of paddock and the erecting of a weighbridge. In addition, with funds made available from a Colonial Development and Welfare grant, eleven Junior Staff quarters and 17,500 square feet of stores, implement sheds and machine shop were completed and put into use.

Livestock

98. With Local Food Production funds the livestock section was increased considerably. At the end of the year some 50 acres of permanent fodder had been established and 61 young dairy heifers were being kept.

Revenue

99. Revenue was further increased. For the past five years it has been as follows:—

1948	$16,319.00
1949	11,364.00
1950	26,503.50
1951	36,189.91
1952	41,618.56

100. The year's revenue was made up as follows:—

Citrus	$15,925.90
Sugarcane	13,767.90
Rice	1,638.49
Coffee	6,985.50
Cacao	385.90
Corn	1,656.03
Livestock	626.58
Yams	41.53
Miscellaneous	590.73
	$41,618.56

Cacao

101. There are approximately 700 acres of old seedling cacao in the La Reunion (400) and La Chaguaramas (300) sections of the Station which have been in an abandoned condition for the better part of ten years. Creditable progress has been made in reclamation work and at the end of the year some 300 acres had been cleared. The general condition of the trees is surprisingly good and there is promise of a crop well above average for seedling cacao.

102. In due course clonal, fertiliser and cultural trials will be established and a commercial demonstration section will be maintained which will include all aspects of the commercial production of cacao and will allow for the testing of new techniques on a field scale. Ultimately, the Witchbroom breeding and selection work will be transferred from Marper.

Diseases

103. *Witchbroom.*—Heavy instances of this disease were still in evidence in the wetter areas, resulting from heavy and continued infection during the abnormally wet year 1951.

104. The campaign against the disease in Tobago was vigorously maintained and it is hoped that the drastic pruning in conjunction with the drier year may result in better crops by 1953–54. While the disease in Tobago is still of minor importance on the windward coast and has not penetrated to the north-east of the island, the heavy infection in the valley behind King's Bay constitutes and ever present threat to the cacao south-west of Man-o'-War Bay.

105. A spraying experiment was carried out at Non-Pareil to determine whether sufficient control of Witchbroom pod infection could be achieved by pod spraying to be worth while at present cacao prices.

Cacao Shade—Witchbroom disease of Ananca Immortelle

106. Further observations were made on this disease. One of the rooted cuttings from broomed trees produced a typical broom on the original cutting, but no brooms have been observed on the new growth or on the other two plants, suggesting that the disease is not of virus nature. A pycnidial fungus has been consistently isolated from brooms but, so far, it has proved impossible to obtain positive results from inoculations.

Sugar Cane

107. At the Central Experiment Station approximately 33 acres of cane were reaped and the average yield was 38.10 tons cane per acre.

108. Planting during the year consisted of multiplication plots of seedlings of the B.50, B.49, B.48 and B.47 series as well as the establishment of two sorting trials with varieties of the B.47 and B.48 series and one fertiliser trial.

109. Over 72,000 cuttings of the B.46 and B.47 series were distributed to the sugar estates.

110. Thirty-one field experiments, comprised of fifteen fertiliser and sixteen varietal trials, were reaped in Trinidad during the year. In the variety trials, B.41227 continued to give good yields, particularly as ratoons, but its juice quality is no better than that of B.3337. Of the more recent varieties, none was outstanding.

111. The varietal position during the year was as follows:—

Variety	% *Total Acres Reaped*	
	1952	*1951*
B.3337	38.3	36.9
B.34104	22.7	27.2
B.37161	21.1	18.8
B.37172	12.1	11.3
B.4098	2.1	1.5
B.H. 10 (12)	1.0	1.4
Others	2.7	2.9
	100	100

Citrus

Seedling Lime Disease

112. Experiments on this disease were continued. To date, the evidence obtained indicates that the disease is not caused by virus. A species of Fusarium has been fairly consistently isolated from diseased tissue but the results of inoculation experiments are inconclusive. Inoculation experiments on plants kept under water stress suggest themselves as the next step in investigating this disease.

Coconuts

General

113. Crops are now back to normal after the 1947 drought, and although in the dry season of 1952 a more severe drought than that of 1947 was experienced, the rainfall was more evenly distributed and the crops did not appear to have suffered to any great extent.

Red Ring Disease

114. This disease was investigated at Nariva-Cocal. It was found that it was spread by the Coconut Weevil (*Rhynchophorus Palmarum*) which burrows in the debris of larval tunnels made in diseased tissue, and emerging with its body covered in such debris, infected with the hermatode, carries it to other palms. It was also shown that spread of the disease via the soil did not normally take place. Control could be effected by cutting up the trunks and petioles of diseased palms and ensuring their complete destruction by burning.

Minor Diseases

115. A field at Florissante Estate, on heavy soil, rather unsuited to coconuts, and where Bronze Leaf Wilt and a number of minor diseases take a steady toll, has been kept under observation since the latter part of 1950. The area concerned had originally been planted with 216 palms. Those

remaining are for the most part about 20-30 years old, and consist of 149 palms varying from good to bad but with no definite disease. There had therefore been a 31 per cent. loss. In addition, there were 24 cases of Little Leaf in varying stages and three cases of False Wilt. Losses had been supplied during recent years and there were 64 'pickets' supplied and another 34 'supplies' growing from 'drop nuts'. Nearly all these supplies were between three and six or seven years of age. The field was, in fact, very typical of its kind. A fertiliser experiment had been laid down in the field, and different rows had received dressing of NPK, NK, N and K annually since 1950.

116. By the end of 1952 a further 8 per cent. loss had been suffered, but 3 per cent. of this was due to the strike of lightning that resulted in the death of six palms. Other losses included nine cases of Bronze Leaf Wilt. Ten of the 'Little Leaf' cases noted at the start had died, and two new ones had started. Four supplies were lost by Red Ring—i.e., 4 per cent. Detailed notes were made on each palm once in six months, and continuation of these observations may be of interest, as diseases such as 'Little Leaf' and 'Pencil Point' are generally slow to develop and often take some years to run their course. Indications to date are that 'Little Leaf' can be checked if taken at an early stage and, as might be expected, Nitrogen dressings seemed to have helped recovery.

117. In line with recent investigations in Ceylon, experiments were carried out on the effect of Magnesium on 'Little Leaf' and 'Pencilling'. In May, 1951 the crowns of a number of palms obviously affected by these diseases were spread with 2 per cent. Mgs04 and others injected with 18 grams each of Mgs04 in tablet form, using the same technique as for similar applications to citrus. A test palm injected with Potassium Bromide showed that translocation to the crown was taking place. These treatments did not, however, produce any noticeable effect by the end of 1952.

Squirrels

118. These continue to cause much damage, and to date the only satisfactory method of control is by shooting. Fairly good control has been achieved by this method on one Cedros estate. Trials on the use of "Warfarin" continue but at present no conclusive results have been obtained.

Oil Palms (Eleais Guineensis)

119. All the trees of the 1948 planting are now bearing fruit. As yet no collection of fruit has taken place as the quantity is very limited. It should be possible to make an estimation of yield in a few years' time. The seed introduced from Nigeria gave satisfactory germination and plants are now available.

Cassava

120. A collection has been established for the production of high quality planting material.

Pigeon Peas

121. A collection has been made in order that high yielding and early maturing strains can be selected.

Corn

122. 10,000 lb. of selected seed corn were produced for distribution.

Weedicide Investigations

123. *Cacao.*—It was shown that Blackstick (*Pachystachys Coccineum*) in cacao could be controlled by the use of 2-4-D sodium salt at a rate of one pound acid equivalent per acre. Damage to the trees only occurred when they were directly sprayed and in this case the damage was confined to the pods and flowers on the tree; no after effects were observed.

124. *Control of Azolla waterweed.*—Control of the aquatic fern Azolla Sp. was obtained by the use of pentachlor phenol at the rate of 3 lb. per acre. This fern can be a serious pest of reservoirs and other still waters.

125. *Rice.*—Preliminary investigations were carried out on the control of weeds in transplanted swamp rice. It was found that quantities up to 2 lb. per acre acid equivalent of the following weedicides gave good control of all weeds present:—

2-4-D	... ...	Sodium salt
2-4-D	... ...	Amine
2-4-D	... ...	Ethyl Ester
M.C.P.A.	... ...	Sodium salt

No damage to the rice was observed apart from slight scorching with the higher rates of application.

RICE

Swamp Rice (Seed Production)

126. The production of pure lines of seed padi continues to dominate the programme of experimental work. Pedigree stocks should be available for planting in the new rice area at the Central Experiment Station in 1954. An extensive collection of varieties in Trinidad is being made and this will be screened for types suitable for local conditions. Further extensive introductions are being made.

Fertiliser Trials

127. A trial was carried out at Freeman Road to investigate the effects of green manure, lime phosphate and potash in various combinations. In no case were any signification increases obtained. Thus the beneficial effect of compost obtained in 1951 was not repeated. It has been decided to discontinue fertiliser trials in this area as it is felt that these results are not indicative of the island position. In a second trial, fertiliser treatments were applied to nursery beds. In this case a difference was obtained in the strength and vigour of the seedlings at the time of transplanting, but there were no significant differences in final yield.

Variety Trials

128. Three variety trials were carried out in good conditions of weather and water. The mean yield obtained were as follows: —

TABLE XII—RICE VARIETY TRIAL NO. 1

Variety	Mean Yield per acre	
	1951	1952
	lb.	lb.
D 52/37	2,581	3,285
D 110	2,125	2,744
D 85/42	—	2,716
Sorro	2,407	2,434
D 54/42	—	2,390

TABLE XIII—RICE VARIETY TRIAL NO. 2

Variety	Mean Yield per acre	
	1951	1952
	lb.	lb.
Bolo	2,835	3,323
Torna	2,366	3,239
Red American	2,794	2,813
No. 79	2,179	2,660
Sughandi	2,659	2,660

TABLE XIV—RICE VARIETY TRIAL NO. 3

Variety	Mean Yield per acre	
	1951	1952
	lb.	lb.
Pokkali	2,749	3,159
Joya	2,534	3,045
Padi Tjina	2,202	3,038
No. 7/75	2,309	2,991
Kavingunpoothala	2,347	2,332

Rice Expansion Programme (as advised by the Standing Rice Committee)

129. *Rice Production.*—During the year a number of projects were started; the work, which was mainly of an engineering nature, being carried out by the Department of Works and Hydraulics.

130. The following summary gives brief details of this work:—

(*a*) *Caroni Savannah Scheme.* The reclamation of about 2,700 acres of saline land. Work started in March. The scheme is incomplete.

(*b*) *Caroni Irrigation Area (Improvement).* The improvement of about 260 acres of saline mangrove. The work started in May and was completed as far as its engineering aspects are concerned.

(*c*) *Nariva-Plum Mitan.* The reclamation of about 1,200 acres of swamp. Work started in May. The scheme is incomplete.

(*d*) *Fishing Pond.* The reclamation of about 900 acres of swamp. Work started in March. The scheme is incomplete.

(*e*) *El Socorro Rice Area.* The improvement of about 200 existing acres and 500 potential acres of rice land was started in March and completed in its engineering aspects.

(*f*) *Central Experiment Station Scheme.* The formation of 135 acres of irrigated, drained and terraced land for the production of seed padi and for experimentation. The work was started in March and is incomplete.

(*g*) *Miscellaneous small areas.* Improvement work on the following existing rice areas:—

Kungal Lagoon, Oropouche; Laventille Swamp; Lands of Ramcharan, Penal; Lands near Manohar Trace, Penal; Marchan Rice Area; Sangre Chiquito Rice Area.

131. Items of plant and equipment were purchased for the performance of engineering works. These included two International TD 18A tractor-bulldozers, excavators, station wagons, concrete mixers, outboard motors, launches, barges, trucks, repair tools, &c. Plant and stores are now centralised at the Caroni Irrigation Headworks at Kelly Village. In addition, plant belonging to the Works and Hydraulics Department, such as excavators, was put at the disposal of the Irrigation Engineer.

St. Augustine Station

132. *Weather.*—The dry season which begun in December, 1951, continued to the middle of 1952 with fairly dry weather. The rainy season had showers fairly evenly distributed throughout, except for a dry spell in October. Rainfall figures at this station for 1952 were as follows:—

Jan.	*Feb.*	*Mar.*	*Apr.*	*May*	*June*	*July*	*Aug.*	*Sept.*	*Oct.*	*Nov.*	*Dec.*
ins.	*ins.*	*ins.*	*ins.*	*ins.*	*ins.*	*ins.*	*ins.*	*ins.*	*ins.*	*ins.*	*ins.*
0.91	1.48	0.72	2.37	2.59	7.10	9.15	9.71	3.55	3.50	4.64	7.15

133. *Revenue.*—Revenue for the past six years was as follows:—

Year	*Total Value*
1947	$44,164.95
1948	46,832.16
1949	55,963.34
1950	62,998.00
1951	65,000.00 (approx.)
1952	65,058.30

134. *Citrus.*—Lifting of citrus started late, as the ground was not wet enough until July. A total of 86,061 plants were distributed, of which 1,748 were on "Free Issues" to Government Departments. During the previous year a total of 97,689 plants were distributed, the decrease in production during 1952 was due to the slowness of growth of plants budded during the latter part of the dry season. It was found necessary to hold over to 1953 approximately 10,000 plants which may have been disposed of in 1952.

135. Although several people made large bookings for Marsh grapefruit during 1951 for delivery in 1952, a large percentage of these orders were cancelled, and a request for replacements with Valencia oranges was made instead. This has been largely due to low world market prices for grapefruit.

136. Approximately 200,000 seedlings of sour orange and "Dominica Wild Grapefruit" have been planted out for budding citrus, and it is hoped to distribute in 1953, about 120,000 plants

137. Orders received for citrus plants for delivery in 1953, amount to over 245,000 plants.

138. *Avocadoes.*—During the year, 9,036 plants were distributed of which 42 plants were on "Free Issue". This shows an increase of 1,154 over the previous year's total of 7,882.

139. Bookings for 1953 amount to 10,682 plants, all of which could be supplied during the current year.

140. *Mangoes.*—6,113 mango plants were supplied during 1952 which is 1,032 less than the previous year's total of 7,599. Orders for 1953 amount to 13,682 plants and it is hoped to supply approximately 10,000 plants during the current year. Provision has been made for increasing production by the addition of two more budders and a 50 per cent. increase in the number of mango stock available for budding.

141. *Vegetable and Ornamental plants.*—The demand for the above seedlings seems to be on the increase as the following figures show:—

Total distribution in 1951	*Total distribution in 1952*	*Amt. increased*
Veg. seedlings: 8,434 boxes	9,450 boxes	1,016 boxes
Dec. seedlings: 4,463 boxes	5,276 boxes	1,813 boxes

142. Sale of flowering trees, shrubs and hedge plants in bamboo pots amounted to 59,920 plants, which is an increase of 5,453 over the 1951 total of 44,467.

143. *Orchard Crops.*—The citrus orchard was given the usual treatment of artificial manure and was cutlassed twice for the year.

144. During the year a total of 6,070 crates of Marsh grapefruits and 592 crates of oranges was sent to the Co-operative Citrus Growers' Association. During the previous year 7,839 crates of grapefruits and 66 crates of oranges went to the Co-operative Citrus Growers' Association.

145. Local sales amounted to—Grapefruits 239,605 and Oranges 59,962 as compared with 1951 local total of Grapefruits 86,000 and Oranges 143,000.

146. *Field Crops.*—With the aim of supplying good quality planting material the following crops were grown:—

(*a*) *Corn.*—36,951 lb. of dry shelled corn was reaped, most of which was sold to the Marketing Department. 596 cobs of green corn was also sold during the year. During the previous year, production was 16,444 lb. dry corn and 24,536 cobs of green corn.

(*b*) *Peas.*—1,096 lb. of dry pigeon peas and 79 lb. of green peas were sold during the year. The previous year's production was 693 lb. dry and 589 lb. green peas.

(*c*) *Yam.*—The yam crop yielded 25,041 lb., most of it being sold to the Marketing Department.

(*d*) *Rice.*—Nursery plants of swamp rice were established at this station for the Economic Botanist.

(*e*) *Vegetables.*—Small areas were planted in Tomatoes, Cabbages, Cauliflowers, &c., and fairly good returns were received.

147. *General.*—The production of cover-crop seeds such as Sun Hemp, Sun Flower, Cowpeas, Wooly pyrol, Kudzu, &c., continues at the station so as to ensure a fresh supply of seeds each year and also to cover the station's requirements. Total production amounted to 1,504 lb. of seeds.

Soil Survey

148. *Field Work.*—In Trinidad approximately 30,000 acres were surveyed in the south, covering the whole of the Oropouche Lagoon. This leaves approximately 160,000 acres are still to be surveyed in the Guayaguayare, Cats Hill Reserve and Cedros Peninsula areas. The soil survey of Tobago was also started and approximately 4,000 acres have been done.

149. *Soil Conservation.*—Eight plots were laid out at L'Esperance, Central Experiment Station, for the measurement of soil loss and run off under different types of vegetational cover. In addition, a site at Maracas Land Settlement was selected for the demonstration of land use employing soil conservation measures; work on this demonstration was delayed for several months awaiting a topographical survey of the area.

150. Advisory work included the preparation of a land utilisation survey of the Brooklyn Land Settlement, the contour lining of El Salvador Estate, the planning of water run off control on the Bagatelle Food Allotments and the formulation of a programme of development for the Mount St. Benedict Farm.

Livestock

Animal Health

151. *Incidence of Disease in the Caribbean.*—The Animal Diseases Reporting Service of the Caribbean Commission continued to operate during the year. This service takes the form of a monthly statement on the incidence of listed diseases throughout the Caribbean area as submitted in territories within the terms of reference of the Commission. The summary of such diseases in the Colony for the year is as follows:—

Disease			
Fowl Cholera			32 outbreaks
Johne's Disease			1 case
Newcastle Disease			9 outbreaks
Rabies Paralytic (Bat-transmitted)			99 cases
Swine Fever			1 outbreak
Tuberculosis:			
No. of cattle tested	4,052		2.4 per cent. reactors
No. of water buffaloes tested	62		19.3 ,, ,,
No. of dairy goats tested	27		11.1 ,, ,,
No. of pigs tested	25		4.0 ,, ,,
No. of poultry tested	171		0.0 ,, ,,

Proclaimed Diseases

152. *Rabies Paralytic (Bat-transmitted).*—The number of reported cases, but by no means the actual number of cases, occurring was 99 as against 27 in 1951. Although there was a marked increase in the incidence of the disease, cases were confined to practically the same areas with a tendency to be less evident in the last quarter of the year.

153. A vigorous campagin of protective vaccination was carried out but he response in certain areas was disappointing as certain livestock owners efused to have their animals protected. In spite of this, the following animals vere vaccinated:—

Cattle	*Water Buffaloes*	*Horsekind*	*Goats*	*Sheep*	*Total*
4,364	85	2,208	508	39	7,204

154. During 1951 a total number of 534 animals was vaccinated.

155. A brief resumé of the incidence of this disease shows that it was first recognised in 1925 but not diagnosed until 1931. Since the initial appearance, he disease has occurred all over Trinidad with the exception of an area beyond he northern range. In 1929, 1930 and 1931, the death rate averaged over 1,000 cases each year. The disease has continued in an irregular manner, most cases occurring in the rainy season, and has also spread in an irregular manner, there often been a district free from the disease but surrounded by a number of badly infected areas.

156 This disease is a classical example of one of which the control is significantly hampered by the reservoir of infection being in a wild life vector—the vampire bat. Control measures are also affected by the stubborn refusal of many of the peasants livestock owners to present their animals for vaccination. There is also the unique feature whereby the vampire bat, as far as is known, is the only mammal which can be infected with the virus of rabies and still survive. This feature is of added significance inasmuch as an infected bat continues to be a potent source of virus, probably for its entire life.

157. It would be unreasonable to expect that the control of this disease can be accomplished by the destruction of all the vampire bats. Accordingly, the most practicable method of control appears to be protective vaccination. The present vaccine being used is a phenolised emulsion of brain tissue. The ideal vaccine would be one which could be administered in one dose and would provide a year's or more resistance, and experiments are being carried out as to the ability of the new preparation of modified avianised (live virus) vaccine to meet these requirements.

158. *Newcastle Disease.*—Throughout 1952 sporadic outbreaks of disease in poultry occurred throughout Trinidad and, to a lesser extent, in Tobago. No definite diagnosis was made but Fowl Cholera and/or Fowl Typhoid was suspected, and it is more than probable that these diseases were responsible for some of the losses.

159. In view of the serious losses being sustained, a concerted survey was carried out in order to arrive at a definite diagnosis on which control measures would be based. Eventually, it was possible to isolate and indentify the virus of Newcastle disease from a flock in Port-of-Spain where severe

losses were sustained. Further investigational work was carried out and it was possible to confirm that the disease existed in the southern area of Trinidad as well. From the clinical symptoms and history of the cases, there is no doubt but that it was also present in Tobago.

160. Control measures, which were promptly initiated, included—

(*a*) the enactment of specific regulations which made the disease a notifiable one and necessitated the application of quarantine restriction on infected premises;

(*b*) the controlled use of an intra-nasal vaccine for immunization; and

(*c*) a programme of dissemination of related information on the disease amongst poultry owners.

161. All chicks sold or distributed from the two Stock Farms were vaccinated before delivery, while at several of the large hatcheries, this was optional at the request of the purchaser. Through this approach, it is hoped to be able to build up a barrier of protection amongst local flocks.

162. Apart from the initial incidence, there were eight additional outbreaks during the year.

163. The Department was most fortunate in having Dr. F. V. Schofield, Professor of Pathology, Ontario Veterinary College, in the island at the time of the initial outbreak and his valuable assistance is gratefully acknowledged. Thanks are also due to Dr. John Crawley, Connaught Medical Laboratories, Toronto, for his assistance in the serological diagnosis of the disease.

164. *Tuberculosis.*—The following table shows the numbers, classes and percentages of reactors to tuberculin tests carried out during 1951–52:—

TABLE XV—NUMBERS, CLASSES AND PERCENTAGES OF REACTORS TO TUBERCULIN TESTS

1951			1952		
Class of Livestock	Number	% Reactors	Class of Livestock	Number	% Reactors
Cattle	3,887	1.4	Cattle	4,052	2.4
Water Buffaloes ...	1,167	28.0	Water Buffaloes ...	62	19.4
Dairy Goats ...	112	0.9	Dairy Goats ...	27	12.2
			Pigs	25	4.0
			Poultry	171	0.0

165. Amongst dairy cows, 2,313 animals were tested of which 38 reacted, a percentage of 1.64. Corresponding figures for 1951 were 3,674 tested, 58 reactors—a percentage of 1.58.

166. The situation with regard to water buffaloes remains unchanged. A very disturbing feature in the diagnosis of the disease in this class of animal is their peculiar organic resistance which allows them, even in advance cases of the infection, to maintain their condition and appetite. Until such time as a drastic change is made in the husbandry of the large herds of these animals by the sugar plantations, it is to be expected that the incidence of the disease will continue to be high.

167. The failure to find visible lesions amongst goats is highly indicative of a non-specific reaction.

168. *Swine Fever.*—An outbreak of this disease occurred in the village of Marac, County of Victoria, which was confirmed by laboratory diagnosis. It is estimated that 150 pigs died from the disease and 47 pigs were destroyed. The respective area was still under quarantine at the end of the year. As a result of this outbreak, vaccination in neighbouring areas and elsewhere in the Colony amounted to 1,206 as compared with a 111 in 1951. There were no cases of this disease in Tobago.

169. *Foot-and-Mouth Disease.*—The Caribbean Commission reported an outbreak of this disease amongst ruminants and swine in the island of Martinique, French West Indies. In view of the gravity of the situation, a meeting of the Veterinary Committee of the British Caribbean Advisory Council on Agriculture, Animal and Health Husbandry, Forestry and Fisheries, was convened. This Committee met in Trinidad under the Chairmanship of the Deputy Director (Animal Husbandry).

170. The report of this Committee was submitted to the Comptroller, Development and Welfare, and embodied specific recommendations with regard to control measures which should be implemented by the several territories in order to exclude, as far as possible, the introduction of this infection into their specific area.

171. In this Colony, these included a complete ban on the importation from the French West Indies, French Guiana, the Dutch West Indies and the British Windward Islands of all cloven-footed animals and all animal products and materials which were considered as possible sources of infection. In addition, regulations were made to deal with vessels and aircraft arriving from listed countries, also measures to be observed by disembarking passengers, included the use of disinfectant mats.

172. The virus responsible for this outbreak was typed as A5 which is reported to be of low virulence. Opinion is divided as to the probable source of infection, importations of cattle both from France and Columbia being suspected.

Non-Proclaimed and Parasitic Diseases

173. *Johne's Disease.*—One case of this disease in a sheep was reported during the year.

174. *Pig Diseases.*—As a result of heavy losses, chiefly amongst young pigs under six months of age, both in the northern and southern areas of Trinidad, especially the latter, a survey was carried out in an effort to determine the cause of these losses.

175. No evidence of Swine Fever was discovered. However, a very constant finding was the association of unsatisfactory husbandry in general with reported losses. Clinical symptoms included—

(*a*) high temperature;

(*b*) lack of appetite;

(*c*) loss of condition;

(*d*) diarrhoea in many instances; and

(*e*) sometimes, pneumonic breathing.

Post-mortem findings showed necrosis of the mucous membrane of the caecum and large bowel with shallow areas of necrosis. In some cases, the lungs showed consolidation and caseation.

176. While no causative organisms such as Salmonella cholerae suis were isolated, the poor condition of husbandry in association with the age incidence of pigs dying and the suggestive post-mortem findings, a tentative diagnosis of Necrotic Enteritis was made.

177. Control measures were initiated, based on the improvement in feeding and housing standards, and the isolation in some cases, and destruction in others, of infected pigs. Some early cases responded to a combination of sulphonamide drugs and antibiotics. The general situation was considerably improved by the end of the year.

178. *Poultry Diseases.*—Apart from Newcastle disease, many cases of Fowl Pox were observed, particularly in chicks under six months of age. Caecal coccidiosis was also observed and several cases, of malnutrition associated with a deficiency of Vitamin B complex. As already mentioned, it is probable that Fowl Cholera may have been responsible for some losses but no definite diagnosis was made.

179. *Miscellaneous Diseases.*—These include *Tetanus,* seen in horses, goats and pigs; *Strangles* in mules; *Anaplasmosis* in a cow; *Milk Fever* in cows; *Mastitis* in cows; and *Acetonemia* in cows.

Internal Parasites

180. These continue to be big offenders especially amongst sheep, goats and young calves. Routine treatment is carried out on the Stock Farm but it is a very difficult matter to convince peasants owners of the value of such treatments and many animals are lost or severely set back by such parasites.

Investigational Work

181. It was possible during the year to initiate some work of this nature. This included—

(*a*) A preliminary survey of the blood chemistry of cattle with special reference to Calcium, Phosphorus, Magnesium and Haemaglobin. This necessary data is being collected for further studies to determine whether local nutritional standards bear any relation to reproductive efficiency in cattle.

(*b*) Observations on the simultaneous vaccination of three-day old chicks against Fowl Pox and Newcastle diseases.

(*c*) Observation on the immunological properties of different types of Rabies vaccine.

(*d*) The value of antibiotics (aureomycin) in the feeding of runt pigs.

Veterinary Diagnostic Laboratory

182. The following specimens were handled at the laboratory during the year:—

Milk	2,961 samples were tested for butter-fat, Resazurin grading, bacteriological examination, ring test for Brucella abortus.
Faecal examinations ...	550
Poultry post-mortem examinations	45
Serological test	733
Urinalysis	4
Blood smears	10
Miscellaneous	6

Animal Husbandry

183. Livestock Shows.—The following livestock shows were held during the year:—

(i) Nine Cane Farmers' and Peasants' Shows in the Sugar Belt area;

(ii) The Tobago District Agricultural Show;

(iii) The Trinidad Goat Society's Eleventh Annual Show.

At all of these shows, representative animals from the Stock Farms were sent for exhibition and the several Veterinary Officers and Livestock Inspectors assisted in judging.

184. *Breed Improvement.*—Table XVI records the services by improved sires at the Stock Farms and District Breeding Units in Trinidad and Tobago.

TABLE XVI—SERVICES BY IMPROVED SIRES, 1952

Class of Sire	Trinidad	Tobago	Total
Stallions —Thoroughbred	44	5	49
Light Draft	9	6	15
Jacks to Mares	24	32	56
Jacks to Janets	201	21	222
Bulls	2,271	102	2,373
Boars	583	53	636
Bucks	1,256	100	1,356
Rams	48	22	70

185. The services of improved sires to Government-owned animals on Farms and District Stations are not included in Table XVI; nor are those of eight pure-bred Sahiwal bulls which were made available in Tobago at approved estates.

186. In continuation of the "no annual sale" policy, in an effort to increase numbers of breeding females (principally cattle), sales were confined on both Farms to young pigs, bulls for breeding purposes, culls and other undesirable types. These were as follows:—

TABLE XVII—SALES AT STOCK FARMS, 1952

Class of Animal or Product	St. Joseph Farm	Tobago Farm	Total
Cattle	26	22	48
Pigs	99	65	164
Goats	18	5	23
Sheep	—	5	5
Poultry	76	—	76
Eggs	19,116	8,160	27,276

Stock Farms

187. *Cattle.*—The breeding policy was continued as in 1951.

188. *St. Joseph Stock Farm.*—

(*a*) the grading of Zebu cows to pure-bred Holstein bulls; and

(*b*) The *inter-se* breeding of half and three-quarter Holstein-Zebu grades with emphasis on the former grade.

189. *Tobago Stock Farm.*—The breeding of pure-bred and high grade Sahiwal.

190. The general management continued along the same lines. This is based on the fullest use of outdoor management together with systematic culling of undesirable types. Disease control measures included regular tuberculin tests, serum-agglutination tests for Brucellosis, vaccinations against Rabies, faecal tests, coupled with monthly dosing of young stock against parasitism and control of external parasites.

191. In the feeding programme full use is made of good quality grass and the use of concentrates is kept at as low a level as possible. In this connection, the feeding of concentrates to dairy cows has been reduced from 8 lb. per gallon of milk produced (1948) to the present figure of 4.2 lb. per gallon.

192. The strength at the end of the year was as follows:—

TABLE XVIII—CATTLE STRENGTH : STOCK FARMS, 1952

Breed and Sex		Trinidad Farm	Tobago Farm	Total
Pure-bred Holstein	Bulls	4	—	4
Grade Holstein	Bulls	63	3	66
Grade Holstein	Cows	98	5	103
Grade Holstein	Heifers	82	1	83
Water Buffalo	Bulls	2	1	3
Working	Oxen	4	2	6
Pure-bred Sahiwal	Bulls	—	24	24
Pure-bred Sahiwal	Cows	—	11	11
Pure-bred Sahiwal	Heifers	—	18	18
Grade Sahiwal	Bulls	—	10	10
Grade Sahiwal	Cows	—	4	4
Grade Sahiwal	Heifers	—	12	12
Pure-bred Zebu	Bulls	4	—	4
Pure-bred Zebu	Cows	3	—	3
Zebu Foundation	Bulls	2	—	2
Zebu Foundation	Cows	6	1	7
Zebu Foundation	Young stock ...	7	—	7
		275	92	367

193. The calves born during the year were as follows:—

TABLE XIX—CALVES BORN—STOCK FARMS, 1952

Breed and Sex		Trinidad Farm	Tobago Farm	Total
Grade Holstein	Bull	38	—	38
Grade Holstein	Heifer	52	—	52
Pure-bred Sahiwal	Bull	—	3	3
Pure-bred Sahiwal	Heifer	—	7	7
Grade Sahiwal	Bull	—	8	8
Grade Sahiwal	Heifer	—	2	2
		90	20	110

194. *Milk Production.*—The total production of the two Farms amounted to 68,702 gallons—65,700 in Trinidad and 3,002 in Tobago.

195. Production at the Trinidad Farm was some 10,000 gallons more than in 1951. This increase was obtained—

(*a*) from more cows, but each giving a higher average yield—635 compared with 589 gallons; and

(*b*) higher yields by first lactation heifers.
Twelve such heifers averaged 614 gallons each, their crude average being 24 lb. per day as against 20 lb. in 1951.

196. The overall herd yield, that is, taking into account all part-time producers, irregular breeders and other misfits, was 635 gallons per animal, a very creditable performance. The corresponding figure for 1951 was 589 gallons. It is noteworthy to record that this figure in 1948 was 252 gallons.

197. An outstanding performance was that by "Jasomattee 18th" (last year's first calver), who completed a first lactation period of 13,176 lb. in 332 days.

198. The thrice daily milking initiated in 1950 was discontinued as it was not considered that this was economically justifiable. It was again obvious that milk yields were governed by the availability of good grass and were highest during the dry season.

199. The following table gives the comparative Trinidad Farm production for the years 1949-1952:—

TABLE XX—MILK YIELD AT THE TRINIDAD STOCK FARM, 1952

Year	Average No. of Cows milked daily	Total Annual Yield lb.	Daily average yield per cow lb.
1952	64	654,716	28
1951	60	553,364	25
1950	69	533,349	21
1949	74	453,236	17

200. Dr. A. L. Jolly, Lecturer in Economics, Imperial College of Tropical Agriculture, who has carried out an economic survey on the Trinidad Farm during the years 1948-52, summarizes the general position as follows:—

> "To sum up, the Trinidad Stock Farm and its dairy herd particularly is an enterprise of which the Department of Agriculture can now be justifiably proud. It possesses a herd of tropical dairy cattle that produce milk at low cost. The Department should be doubly proud in that the present performance has been built up in five short years from a most profitless, in every sense of the word, undertaking. The value of this farm at its present standard of management cannot be questioned; not only does it produce large quantities of milk for institutional consumption at the mininum cost to the taxpayer, but it demonstrates in a most practical way how a tropical dairy herd can and should be run."

201. Total milk sales from the two Farms amounted to 84,167 gallons. This was distributed amongst hospitals, schools and other institutions.

202. *Purchase of cattle from Jamacia.*—In keeping with Recommendation 29 of the Interim Report of the Local Food Production Committee, 32 cows, 61 heifers and 13 heifers calves (Grade Holstein) were imported. These have been distributed between the two farms and the Central Experiment Station at Centeno and are not included in the cattle strength as given at Table XVIII. Separate records of their production and progeny are being maintained. The purpose of this importation is to build up the number of cattle whereby increased numbers of progeny for sale to the public will be available.

203. These animals arrived by air in two batches—52 on 13th May, 1952 and 54 on 24th December, 1952. Milk production from these dates amounted to 4,970 gallons and is not included in total farm production (paragraph 194) but is included in total sales (paragraph 201). Calvings amounted to twenty—fifteen bull calves and five heifer calves.

204. *Cattle Breeding Unit at Central Experiment Station, Centeno.*—A start was made on the development of cattle and water buffalo units at this Station. At the end of the year the strength (Grade Holstein) was 64 growing heifers and 6 water buffaloes—1 bull, 2 cows, 1 heifer and 2 heifer calves.

205. *Horsekind.*—There was no major change in the breeding policy from the previous year. Reference to Table XVI shows that the use made of the light draft stallions showed no improvement.

206. The total strength of the two Farms at the end of the year was as follows:—

Class of Animal	*Number*
Thoroughbred Stallion	3
Light draft	2
Mares	17
Colts	4
Fillies	3
Horse foals	1
Mules	7
Mule foals	6
Jack Donkeys	21
Janets	13
Total	77

207. *Pigs.*—The pig unit at both Farms were maintained as before. During the year 242 piglets farrowed, 116 Large Black and 126 Berkshire. From this total there was a loss of 14 piglets prior to weaning age or a mortality rate of 5.8 per cent.

208. The total strength of the two Farms at the end of the year was:—

Breed	*Boars (Adult)*	*Boars (Young)*	*Sows*	*Gilts*
Large Black	13	22	7	37
Berkshire	13	23	10	21
	26	45	17	58

209. *Goats.*—The goat unit at the Trinidad Farm consists of British Alpine breed only. The outdoor system of management was continued at both farms.

210. In addition to the Anglo-Nubian unit at the Tobago Farm, forty-five foundation does were imported from Antigua to increase the number of breeding females for eventual sales to the public.

211. The strength at the two Farms at the end of the year was as follows:—

Breed	*Bucks*	*Does*
British Alpine	18	11
Grade Alpine	8	4
Anglo-Nubian	11	17
Jumna-Pari	1	–
Foundation	5	53
	43	85

212. *Sheep.*—Sheep breeding is confined to the Tobago Farm. Grading of native and imported foundation ewes to the Barbados Black Belly ram continues. During the year 75 foundation ewes were imported from Antigua to increase the number of breeding females. A small number of the Wiltshire Horn breed is maintained for experimental purposes.

213. The strength at the end of the year was 201 head composed of 8 rams, 142, ewes, 31 ram lambs and 20 ewe lambs.

214. *Poultry.*—Two breeds are maintained at both Farms, Rhode Island Red and White Leghorn. The basic policy is—

(*a*) to breed replacements both for the farms and demonstration stations;

(*b*) to exchange pure-bred cockrels for common-bred through the District Services and Land Settlement divisions of the Department;

(*c*) to sell surplus stock of hatching eggs and young chicks to the public; and

(*d*) culled eggs for eating.

215. The general health of the stock was satisfactory. There were no reactors to the Tuberculin or Pullorum tests.

216. Egg production was also considered satisfactory for local conditions being higher in the White Leghorn unit—an average of 199 eggs per bird per annum.

217. Small units of White Muscovy ducks were maintained at both Farms and these continued to produce good results.

218. The total poultry strength at the end of the year was as follows:—

Breed	*Cocks*	*Hens*	*Chicks*
Rhode Island Red	31	87	356
White Leghorn	19	61	224
	50	148	580

	Adults	*Ducklings*	
Ducks	20	70	Total: 90

219. *Pastures, Fences, Crops, &c.*—The value of properly managed pasturage cannot be over-emphasised in economic dairy management as it is realised that the improvement in milk yields and general condition and health of the animals at the stock farms is largely due to the concentrated efforts toward the development and maintenance of improved pastures.

221. Plantings of corn were carried out at both Farms. At the Trinidad fields, weeding and supplying were necessary, manuring and establishment of two acres of tropical kudzu (Pueraria phaseoloides). Some new areas were fenced and general maintenance on existing fences was carried out.

221. Plantings of corn were carried out at both farms. At the Trinidad Farm, the area planted was increased to 50 acres which yielded approximately 100,000 lb. of dried shelled corn. The corresponding figures in Tobago were four acres yielding 7,200 lb. of corn. All of this corn was processed for the feeding of livestock.

222. *Revenue of the Stock Farms.*—The total revenue of the Trinidad Farm was $118,222.27 and the Tobago Farm, $21,154.79.

	Trinidad Farm	*Tobago Farm*
Sale of Stock	$ 7,281.82	$ 5,355.70
Sale of Milk	105,226.80	12,004.97
Sale of Eggs	1,840.38	702.54
Stud Fees	1,663.75	491.39
Stabling	798.80	118.00
Pasturage Fees	—	140.16
Sale of Coconuts and Limes	—	2,279.41
Miscellaneous	1,410.72	62.62
	$118,222.27	$21,154.79

MARKETING AND FISHERIES DIVISION

Marketing

223. *Market Conditions and Supplies.*—Local Markets were fairly well supplied throughout the year with ground provisions and vegetables, a fair portion of which came from other British West Indian Colonies. Locally-produced pigeon peas, both green and dry, and black-eye peas were scarce. During the first half of the year, corn was not available from local sources and had to be imported from British Honduras to the extent of 778,000 pounds. As the result of the long dry season and the generally favourable conditions both at planting and reaping the corn crop reaped towards the end of the year exceeded the record of 1947. Encouraged by the Government-guaranteed price of 6 cents per pound for dry shelled corn, farmers sold to the Marketing Board 3,952,629 pounds. Fair supplies of fruit were available throughout the year.

224. *Importations.*—Imports of ground provisions from other Colonies were substantially higher in 1952 than in 1951.

	1951	*1952*
	Tons	*Tons*
Sweet Potatoes	1,206	1,718
Yams	7	19.8
Plantains	104	266
Other vegetables	5	731
	1,322	2,734.8

225. *Shipments.*—Shipments from Tobago fell off considerably, with the exception of corn which showed a marked increase.

	1951	*1952*
	Tons	*Tons*
Bananas	86	32
Plantain	65	11
Ground Provisions	939	363
Corn	51	145
Peas	5	1
	1,146	552

226. *Ground Provisions Depot.*— The Ground Provisions Depot, which forms part of the Marketing Board's functions, operates as follows:—

(i) Purchase of ground provisions, fruit and green vegetables from producers;

(ii) Provision of supplies to Government Medical Institutions;

(iii) Retail sales to the public.

During the year, purchases amounted to $116,875.88 and sales to $149,540.53 as compared with $111,181.76 and $134,817.43 respectively, in 1951. Total purchases are analysed below:—

Ground provisions	$ 27,952.71
Green vegetables	50,823.47
Bananas	6,528.31
Fruits	18,693.58
Sundries	12,877.81
	$116,875.88

Of the total sale, 75 per cent. were made to Government Institutions.

227. *Seeds and Planting Material.*—Supplies of seed were obtained mainly from Messrs. W. Atlee Burpee Co., and Messrs. Peter Henderson & Co., of the United States of America, whose seeds have given good results under local conditions. Sales of seeds and other planting material showed a marked increase on those of 1951. Comparative figures of sales are given below:—

	1951	*1952*
Imported seeds	$18,382.23	$21,169.27
Local plants	2,805.09	8,594.06

228. *Fertilisers and Insecticides.*—The demand for fertilisers and insecticides from farmers continued to increase. These two commodities were offered for sale at all marketing depots. Figures of sales for 1951 and 1952 are set out hereunder:—

	1951	*1952*
Fertiliser	71,475 lb.	85,016 lb.
Insecticides	$844.36	$1,578.77

229. *Rice Husks.*— The Board continued to purchase rice husks from mills for the extraction of the brand and "brokens" for the use in animal feeds. Purchases, however, were substantially less in 1952 than in the previous year. This was mainly due to the wider use by farmers of this offal for feeding straight to their stock. Purchases totalled 488,128 pounds, of which 456,941 pounds were processed, providing 168,000 pounds of bran and about 24,000 pounds of rice "brokens".

230. *Depot Extensions.*—Two new depots were opened during the year. In addition, a system of mobile units was instituted with a view to extending services to areas not immediately served by depots. Operating from San Fernando, the truck carried commodities for sale to producers in Palo Seco, Erin, Forest Reserve, Fyzabad, La Brea and Point Fortin. Response to the service was immediate and indicated that it was filling a need.

231. *Fish.*—The service of handling and distributing the fish caught by the members of the Co-operatives on the North Coast was maintained. Owing to the decontrol of the prices of fish which took place during the year, the basis of handling the North Coast fish had to be changed; as from the 1st July, the fish was handled on a consignment basis and prices paid to the Co-operatives depended on the prices realised at the terminal points at any given time. Only the Matelot Fishermen's Co-operative operated during the year. 94,428 pounds were handled for them and realised a total sum of $23,787.00. The quantity handled represented a substantial decrease on the previous years. The average wholesale price per pound realised for all classes of fish was 25 cents.

232. *Molasses.*—An agreement was reached with the Sugar Manufacturers' Association whereby the Board's requirements would be fully met from estates nearest to the City. Some 22,140 gallons of molasses were purchased and made available for sale at certain depots, or incorporated in stockfeeds prepared by the Board.

233. *Banana Exports.*—The contract with the Caribbean Fruit Co., of New Orleans, U.S.A., was renewed for a period of five years with prices subject to review biennially. Exports fell off considerably; only 50,039 stems were shipped as compared with 83,305 stems in the previous year. These exports added some $59,000 to the U.S. dollar earnings of the Colony. The decline in the level of exports was due to a combination of three factors, viz., prolonged dry weather, increased local consumption and the progressive increase of Panama Disease. Price control on bananas was removed on the 1st of September, and this caused an increase in the price paid for bananas for local consumption. This to some extent also interfered with the export trade.

234. *Preparation of Livestock Feeds.*—The following livestock feeds were prepared and sold:—

	Quantity	*Value*
Dairy Feed	1,077,387 lb.	$78,217.80
Poultry Feed	1,023,385 ,,	91,334.88
Scratch Grain	550,880 ,,	51,602.92
Pig Ration	801,299 ,,	50,907.56
Total	3,452,951 lb.	$272,063.16

This represented an overall increase of about 53 per cent. on sales in 1951. In addition, feed ingredients to the extent of 1,151,613 pounds were sold to Government Institutions and stock owners, amounting in value to $76,609.35.

235. *Improvements.*—The fishing improvement projects at Cedros and Icacos beaches were open for public use early in the year. These improvements provided a sleeping shed, a cooking shed and sanitary facilities for fishermen at these centres. An improvement scheme was begun at Carenage which provided lockers for fishermen's gear, sanitary facilities, and a shed for selling fish. The building of a ramp for facilitating the hauling up of boats was included in the scheme but was not completed at the end of the year.

236. In response to requests from the Orange Valley Fishermen's Association, a survey was made to ascertain what improvements and facilities could be provided for that area. This survey was the subject of a special report.

237. *Investigations.*—A preliminary survey into the methods of lobster fishing, the distribution of lobsters and their potentialities in and around the Buccoo Reef, Tobago, was commenced. Different methods of trapping and different types were tried out. On the basis of the preliminary indications obtained, this survey will be maintained and expanded in 1953.

238. *Statistical data.*—Information kindly supplied by the Municipalities revealed the following amounts of fish passing through Municipal Markets:—

Port-of-Spain	...	...	3,241,563 lb.
San Fernando	...	...	978,884 ,,
			4,220,447 lb.

239. *Trawl fishing.*—The American trawler engaged on the survey of the waters around the Colony completed its investigations and left the Colony. The other trawler continued to operate commercially in the most suitable areas found up to date, namely, the North Coast. An American type of trawl net proved most successful up to now and was being used by this trawler. A substantial contribution to the fish supplies of the City has been made by this vessel.

240. *Pond culture of fish.*—Work on the excavation of four ponds and the erection of the Caretaker's quarters, at the site in the Bamboo Grove, Churchill-Roosevelt Road, was completed. The ponds were treated and filled with water and 280 *Tilapia Mossambica,* purchased from Esperanza Estate, were introduced.

241. Between July and August 3,000 fingerlings were removed and introduced into two adjoining fields planted to rice as an experiment to test out the joint culture of rice and fish in the same field. By the end of November, after the reaping of the rice, 536 fish were recovered, a few of which measured over 7 inches.

242. By the end of the year, the fish in the ponds had multiplied so fast that a condition of overcrowding existed. Some of the fish, believed to be those from the original introduction, had attained a length of 9 inches and weighed over half pound.

243. Further development awaited the appointment of an experienced officer.

Land Settlement

244. During 1952, 28 new tenancies were created and 80 holdings retenanted, while 52 were surrendered and 41 repossessed.

245. Settlers continue to show a great interest in their holdings and during the year 27 houses were constructed on Land Settlements, and general repairs were done to several houses on the Brooklyn and La Pastora Government-owned settlers' houses. At Brooklyn, several houses were supplied with electricity, which was made available to that area during the year.

246. The condition of livestock in general is good, despite the outbreak of paralytic rabies on the San Francisco Settlement, where inoculation was immediately given to check the spread of the disease. Similar precautionary methods were taken on a few other settlements.

247. Rents collected for 1952 amounted to $11,540.95.

248. Revenue collected amounted to $11,367.15, as detailed hereunder:—

Citrus	$1,842.73
Cocoa	6,132.95
Bananas	58.83
Ground Provisions	177.74
Timber and Lumber ...	667.47
Coconuts	2,283.01
Tonca Beans	32.00
Plantains	13.23
Coffee	130.30
Miscellaneous	28.89
	$11,367.15

249. Mr. E. W. Leach, Director of Agriculture, resumed duties from vacation leave on the 19th January and was transferred to the Gold Coast in March.

250. Mr. C. H. B. Williams, Deputy Director (Crop Husbandry), was appointed to the post of Director of Agriculture from the 26th March.

251. Capt. H. V. M. Metivier, Deputy Director (Animal Husbandry), retired from the service on the 11th March on reaching the age limit. He was re-employed on contract.

252. Dr. L. R. Hutson, Chief Veterinary Officer, Leeward Islands, was appointed to the post of Deputy Director (Animal Husbandry) with effect from the 25th June.

253. Dr. A. V. Hall, Veterinary Officer, retired from the service with effect from the 31st May.

254. Dr. H. N. Metivier was appointed Veterinary Officer from the 14th August.

255. Dr. J. L. Shannon proceeded on 160 days vacation leave in June and was re-employed in December.

256. Mr. M. N. Lucie-Smith, Agronomist, was transferred to the Gold Coast after spending vacation leave in the United Kingdom.

257. Mr. G. P. Blair, Agricultural Officer, was seconded on the 2nd December to the Government of St. Lucia.

258. Mr. P. O. McG. Hosten, Land Settlement Supervisor, was seconded to the post of Executive Officer, Land Settlements, from the 16th September.

259. Mr. P. J. Dominique was appointed Senior Agricultural Assistant with effect from the 1st January.

260. Mr. S. E. Hagley, Senior Agricultural Assistant, retired from the service on the 31st December.

261. Mr. C. D. Kissoondath, Field Assistant, Grade I, retired from the service on the 12th December.

262. Messrs. H. N. Bernard and F. C. Olivier were appointed Scientific and Junior Scientific Assistants, respectively, from the 1st May.

263. Mr. R. Ali was promoted to the post of Stock Inspector, Grade II, and Mr. J. Mohansingh to that of Stock Foreman with effect from the 1st October.

264. Mr. F. O. Assam was appointed Fishery Assistant from the 1st August.

265. Mr. C. A. Ford, Agricultural Assistant, left the Colony in March for the United States where he spent his vacation leave.

266. Messrs. J. F. Bell, Agricultural Officer, and W. McMillan, Agricultural Assistant, resumed duties from vacation leave spent in the United Kingdom on the 14th November and 28th April, respectively.

267. Mr. W. O. Bishop, Agricultural Assistant, resumed duties on the 20th November from vacation leave spent in Grenada.

268. Messrs. J. O. Slocombe and C. Applewhite, Field Assistants, Grade II, were awarded free studentships to the Imperial College of Tropical Agriculture.

269. Mr. C. C. Haqq, Costings Officer, left the Colony for the United Kingdom on the 8th September to undergo courses in Dairy and Poultry Husbandry at Monmouthshire Institute of Agriculture, Wales. Mr. Haqq was granted a Colonial Development and Welfare Scholarship.

270. Mr. S. Bharath, Agricultural Assistant, was granted a Colonial Development and Welfare Scholarship and left the Colony on the 5th August for Wye College, where he will pursue a course in Horticulture, leading to a Bachelor's degree in Science.

Publications

271. The following appeared in the *Journal of the Agricultural Society of Trinidad and Tobago* :—

Diseases of Coconuts in Trinidad by E. B. Martyn, B.A., A.I.C.T.A. (Vol. 52, Part 2, pp. 145-149).

Sugar Cane Experiments in Trinidad, 1951 by D. M. Hanschell, B.Sc., A.I.C.T.A. (Vol. 52, Part 2, pp. 155-161).

Some Possibilities of Tropical Kudzu in Trinidad and Tobago by Dr. J. L. Shannon, D.V.M. (Vol. 52, Part 3, pp. 331-335).

Our Annual Pig Loss Is Too Great by T. A. des Iles, D.V.M., Dip. Agric. (Vol. 52, Part 4, pp. 389-391).

272. The following appeared as supplements to the *Journal of the Agricultural Society of Trinidad and Tobago,* and were later reprinted as bulletins of the Department of Agriculture, Trinidad and Tobago (New Series):—

Processing of Cacao for the Market by B. G. Montserin, Ph.D., M.Sc., B.S.A. (Vol. 52, Part 1, pp. 108-124) (Bulletin No. 3, New Series).

The Cultivation of Bananas and Plantains by B. G. Montserin, Ph.D., M.Sc., B.S.A. (Vol. 52, Part 2, pp. 242-268) (Bulletin No. 4, New Series).

273. The following were contributed to *Tropical Agriculture* :—

Citrus Experiments at the St. Augustine Experiment Station by D. S. Murray, B.A. (Cantab.), A.I.C.T.A. Vol. 28, Nos. 7-12, pp. 215-227).

Some Aspects of Weed Control in Trinidad (a paper read at the 1951 Conference of the B.W.I. Sugar Technologists' Association held in British Guiana) by F. H. B. Blackburn, D. M. Hanschell, B.Sc., A.I.C.T.A., and M. Clarke. (Vol. 29, Nos. 1-3, pp. 54-69).

Estate Fertiliser Trials on Coconuts in Trinidad by D. B. Murray, B.A. (Cantab.), A.I.C.T.A., and M. N. Lucie-Smith, M.A., B.Sc., Dip. Agric. (Vol. 29, Nos. 7-12 pp. 180-195).

274. Backyard Gardening Series:—

Planning your Backyard Garden

Avocado Pears	Cauliflowers	Melongenes
Bananas	Citrus	Ochroes
Beans	Corn	Onions
Beets	Eddoes and Tannias	Sweet Potatoes
Cabbage	Lettuce	Tomatoes
Carrots		Yams

275. The following was published by the West Indian Limes Association, Inc.:—

The Lime Disease Problem—A Consideration of the Possibility of Successful Rehabilitation of the West Indian Limes Industry in the South Caribbean by M. N. Lucie-Smith, M.A., B.Sc., Dip. Agric.

	Date	References	Remarks
		AGRICULTURAL	
Gazette Notice No. 73. Interim Price for Farmer's Canes, 1952	12th January, 1952	Production of Cane Ordinance, No. 61 of 1946, Section 9 (1) (*a*)	Minimum price of $7.20 per ton
Gazette Notice No. 197. British Honduras Sugar Quota	31st January, 1952	— —	— — —
Gazette Notice No. 397. Sugar Industry Labour Welfare Committee Inc. Ordinance	6th March, 1952	Ordinance No. 40 of 1951	Disallowance not exercised in respect of Ordinance No. 40 of 1951
Gazette Notice No. 1019. Distribution of Pool—Cocoa Crop 1951-1952	5th June, 1952	— —	— — —
Gazette Notice No. 1193. Sugar Industry (Special Funds) Ordinance	3rd July, 1952	Ordinance, No. 12 of 1948—Section 8 (3)	Appointment of member to Sugar Industry Committee
Gazette Notice No. 1255. Sugar Industry Labour Welfare Fund Committee	31st July, 1952	do. do.	do. do. do.
Gazette Notice No. 1345. Sugar Industry Labour Welfare Fund Committee	18th December, 1952	— —	do. do. do.
Gazette Notice No. 2280. Wages Council for the Sugar Industry	do.	Wages Council Ordinance, 1949	do. do. do.
Gazette Notice No. 2284. Sugar Industry Labour Welfare Fund Committee	do.	Sugar Industry (Labour Welfare Fund) Regulations, 1952	Appointment of Secretary to Sugar Industry Fund Committee
Government Notice No. 28. Sugar Quotas Order, 1952	23rd February, 1952	Sugar Quotas Ordinance, Ch. 23. No. 13	Quotas for each sugar manufacturer in the Colony
Government Notice No. 68. Cocoa Rehabilitation Scheme	24th April, 1952	Council Paper No. 61 of 1940	Additional variations to the Cocoa Subsidy Scheme, 1940
Government Notice No. 138. Wages Regulation (Sugar Industry) Order, 1952	7th August, 1952	Wages Councils Ordinance, No. 20 of 1949	Wages Regulation—Statutory minimum remuneration payable to workers
Government Notice No. 151. Sugar Industry Labour Welfare Fund (Amendment) Regulations	28th August, 1952	Sugar Industry Special Funds Ordinance, No. 12 of 1948	Revocation of Regulations 15 and 16 of the Sugar Industry (Labour Welfare Fund) Regulations, 1952

LEGISLATION—CONTINUED

	Date	References	Remarks
		AGRICULTURAL—*Continued*	
Government Notice No. 180. Production of Cane (Requisition of Returns) Order, 1952	30th October, 1952 ...	Production of Cane Ordinance, No. 61 of 1946	Return to be submitted to the Director of Agriculture
Government Notice No. 182. Cocoa Rehabilitation Scheme	6th November, 1952 ...	Council Paper No. 61 of 1940 ...	Additional Variations to the Cocoa Subsidy Scheme
Government Notice No. 189. Crown Lands Forest Produce (Amendment) Rules, 1952	20th November, 1952 ...	Crown Lands Forest Produce Rules, 1936	Revocation of Schedules II and III
Government Notice No. 197. Plant Protection (Amendment) Regulations, 1952	27th November, 1952 ...	Plant Protection Ordinance, Ch. 23. No. 16	Regulations 32A and 32B added to Regulation 32
Government Notice No. 215. Price of Farmers' Canes—1952	4th December, 1952 ...	Production of Cane Ordinance, No. 61 of 1946	Formula for determining the price of Farmers' canes
Ordinance No. 28. An Ordinance to regulate the export of cocoa from the Colony	15th May, 1952 ...	— —	— — —
Ordinance No. 37. An Ordinance to provide for the coming into operation of the Exportation of Cocoa Ordinance	30th May, 1952 ...	— —	— — —
Ordinance No. 48. An Ordinance to amend the Cocoa Industry Ordinance	21st November, 1952 ...	Cocoa Industry Ordinance, Ch. 23. No. 22	— — —
Ordinance No. 51. An Ordinance to amend the Sale of Produce Ordinance	11th November, 1952 ...	Sale of Produce Ordinance, Ch. 23. No. 17	— — —

LEGISLATION—CONTINUED

	Date	References	Remarks
		VETERINARY	
Gazette Notice No. 303. Dogs (Amendment) Ordinance, 1951	21st February, 1952	Ordinance, No. 45 of 1951	Disallowance not exercised in respect of the Dogs Ordinance
Gazette Notice No. 1271. Diseases of Animals (Poultry) Ordinance	17th July, 1952	Diseases of Animals Ordinance, No. 16 of 1952	Disallowance not exercised in respect of the Diseases of Animals Ordinance
Gazette Notice No. 1523. Appointments to the Veterinary Surgeons Registration Board	28th August, 1952	Veterinary Surgeons Registration Ordinance, Ch. 25. No. 1	Appointments of Dr. L. R. Hutson and Capt. H. V. M. Metivier to the Veterinary Surgeons Board
Gazette Notice No. 1524. Registration of Veterinary Surgeon	do.	do. do.	Registration of Dr. L. R. Hutson
Gazette Notice No. 1884. Registration of Veterinary Surgeon	do.	do. do.	Registration of Dr. H. N. Metivier
Government Notice No. 47. La Brea, Penal and Point Fortin Slaughter House Bye-laws, 1952	20th March, 1952	Public Health Ordinance, Ch. 12. No. 4	— — —
Government Notice No. 48. La Brea Slaughter House Bye-laws	do.	do. do.	Area referred to as La Brea defined
Government Notice No. 49. Penal Slaughter House Bye-laws	do.	do. do.	Area referred to as Penal defined
Government Notice No. 50. Point Fortin Slaughter House Bye-laws	do.	do. do.	Area referred to as Point Fortin defined
Government Notice No. 54. Slaughtering of Livestock Order, 1952	31st March, 1952	Defence Regulations, 1939	Prohibition of the slaughter of livestock without the permission of the Department of Agriculture
Government Notice No. 67. Importation of Animals (Foot-and-Mouth Disease) (Alberta, Saskatchewan and Manitoba, Canada) Amendment Regulations, 1952	24th April, 1952	Diseases of Animals Ordinance, Ch. 25. No. 2	Prohibition of importation of livestock from Canada
Government Notice No. 98. Importation of Animals (Foot-and-Mouth Disease) (Alberta, Saskatchewan and Manitoba, Canada) Amendment Regulations, 1952	19th June, 1952	do. do.	Amendment of Regulation 2 of above

	Date	References	Remarks
		VETERINARY—*Continued*	
Government Notice No. 108. Diseases of Animals (Poultry) Regulations, 1952	3rd July, 1952 ...	Diseases of Animals Ordinance, Ch. 25. No. 2	Prohibition of importation of Poultry from specified countries
Government Notice No. 141. Diseases of Animals (Poultry) Amendment Regulations, 1952	7th August, 1952 ...	do. do. ...	Part II of the First Schedule of the Diseases of Animals (Poultry) Regulations, 1952 amended
Government Notice No. 149. Wild Animals and Birds Protection Amendment Regulations, 1952	28th August, 1952 ...	Wild Animals and Birds Protection Ordinance, Ch. 25. No. 7	— — —
Government Notice No. 156. Wild Animal, and Birds (Game Wardens) Regulations	30th August, 1952 ...	do. do.	— — —
Government Notice No. 164. Fowl Pest Order, 1952	2nd October, 1952 ...	Diseases of Animals (Poultry) Ordinance, 1952	Precautions to be adopted to check fowl pest
Government Notice No. 196. Caroni Slaughter House Bye-laws	27th November, 1952 ...	Public Health Ordinance, Ch. 12. No. 4	— — —
Government Notice No. 210. Importation of Animals (Foot-and-Mouth Disease) (French West Indies) Regulations, 1952	4th December, 1952 ...	Diseases of Animals Ordinance, Ch. 25. No. 2	Prohibition of Importation of Animals from Martinique
Government Notice No. 229. Importation of Animals (Foot-and-Mouth Disease) (French Guiana, the French West Indies, the Dutch Islands of St. Maarten, St. Eustatius and Saba and the British Windward Islands) Regulations, 1952	16th December, 1952 ...	do. do. ...	Prohibition of Importation of Animals from territories mentioned

WEIGHTS AND MEASURES

4 drams	=	1 ounce (oz.)
16 ounces	=	1 pound (lb.)
28 pounds	=	1 quarter (qr.)
4 quarters	=	1 cwt. (112 lb.)
20 cwts.	=	1 ton (2,240 lb.)

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2 pints	=	1 quart
4 quarts	=	1 gallon (Imperial)

Cacao :

1 fanega	=	110 lb.
1 bag	=	200 lb. (dry cocoa)

Rice :

1 barrel paddy = 160 lb.
(as milled locally at present, without parboiling, provides approximately 80 lb. clean rice).

Citrus :

Average Weight—Standard Field Crate	—Grapefruit	80 lb.	
	Oranges	100 ,,	
Average Fruit—Standard Field Crate	—Grapefruit	80 lb.	
	Oranges	200 ,,	
Average Weight—Shipping Crate	—Grapefruit	80 lb.	
	Oranges	90 ,,	
Average Fruit—Shipping Crate	—Grapefruit	80 lb.	
	Oranges	200 ,,	
Weight Canned Juice—Case of 24 x 20 oz.	cans	38 ,,	gross
Weight of Fruit—Per Case of fruit	—Grapefruit	72 lb.	
	Oranges	80 ,,	
Average Weight of Standard Field Crate	—	80 ,,	

Limes :

1 barrel	=	160 lb.

STERLING MONEY TABLE

Sterling				*B.W.I. dollar equivalent*
4 farthings	...	1 penny	=	2 cents
12 pence	...	1 shilling	=	24 cents
2 shillings	...	1 florin	=	48 cents
2 shillings and 6 pence		1 half crown	=	60 cents
4 shillings and 2 pence			=	One dollar
5 shillings	...	1 crown	=	One dollar and twenty cents
10 shillings	...	1 half sovereign	=	Two dollars and forty cents
20 shillings	...	1 pound (£)	=	Four dollars and eighty cents
21 shillings	...	1 guinea	=	Five dollars and four cents.

JOURNAL OF THE AGRICULTURAL SOCIETY
[SEPTEMBER, 1953]

SUPPLEMENT

BY THE

DEPARTMENT OF AGRICULTURE

[REPRINTED]

WHAT THE DEPARTMENT IS DOING

This quarter has been wetter than the corresponding quarter of 1952, although in general the rainfall recorded has not been substantially above that of the average for the preceding 22 years. There have been floods as during every rainy season and these have caused damage to crops in low-lying areas in certain parts of the Colony. The Fisheries Division, in particular, was hard hit when in mid September flood waters swept away the bulk of their experimental fish at the Fish Farm. A new series of experiments will be laid down as soon as circumstances permit. A start has been made in filling the four westerly ponds at Bamboo Grove preparatory to resuming part of the experimental programme.

A collection of fish from Grande Riviere and Sans Souci rivers has been made in search of predator for controlling Tilapia populations in ponds. In the absence of a predator, the Tilapia tend to multiply to the extent that the fish do not grow to any appreciable size. The control, by keeping the numbers down, enable those that remain to grow to a larger size. Interestingly enough, the fresh water fishes of the northern side are different from those on the southern side of the Nothern Range. On the southern side the guabine occurs as a predator; on the northern side the Giant Goby assumes that role.

Investigation of the practicability of utilising "bare-root" citrus nursery plants for establishment of orchards was commenced. Experimental plots were laid down at the Imperial College of Tropical Agriculture, the El Reposo Demonstration Station and two private estates in addition to the plot at the Central Experiment Station. Bare-root plants of Marsh grapefruit, Valencia orange and West Indian lime were set out alongside comparable plants of the same varieties dug "en pilon" as in the general practice in Trinidad. Measurements are being made of the percentage taken and rate of growth as well as costs.

Other citrus experiments involving orchard management methods have been continued as were observations on the plants of so-called Bergamot grown from scion material introduced two years ago from Tobago. Three

distinct types of plants have been separated, one producing no oil glands at all in the leaves. Seed of Bergamot obtained from Jamaica was sown in the greenhouse in August with the hope of raising nucellar seedlings from which clonal material may be multiplied.

A start has been made on a proposed museum collection of tropical fruit. Three varieties of Adriatic Fig, two of breadfruit, one each of Natal Plum and White Sapote were set out early in September; additions will be made as satisfactory plants become available.

Livestock Developments at the Central Experiment Station:

Rapid advances have been made during the past year at the El Carmen section of the Central Experiment Station in the establishment of a cattle herd. There are at present 108 head of cattle on the station excluding buffaloes. The cattle are divided into two lots, those allocated to the Central Experiment Station and those on rotation from the St. Joseph Farm. The latter, the future dairy herd at the Farm, spend from their 6th to 20th month at El Carmen and in this way the St. Joseph Farm can devote more time to the husbandry of weanling calves and milking cows.

The management of all cattle is entirely outdoor. There are some twenty-three acres of well-drained undulating land which are divided into 5 holding paddocks and are supplied with well water. Controlled grazing is practised with electric fences and in the dry season the cattle graze throughout the night. Fodder is derived from 38 acres of grazing and/or soiling grasses (Uganda) along with fourteen acres of Tropical Kudzu. Some of this is soiled for feeding in the holding paddocks along with some concentrates. Minerals are always available in boxes.

Cattle are treated for internal parasites and sprayed for ticks as indicated. Also, the herd is tested periodically for brucellosis and tuberculosis.

Two barns have been erected, one to accommodate thirty-four head of cattle in stanchions and the other containing ten calf and four maternity boxes, feed store and chaffing machine. Each stanchion is fitted with its

own self-filling water bowl. Well and rain water are used as pipewater is not available. Currently, 18 cattle are being milked and the milk is being pasteurized at the St. Joseph Farm. Two herd bulls are maintained.

A buffalo herd is also in the making at the Central Experiment Station. Fourteen selected heifers were recently purchased and are now temporarily accommodated at the O'Meara Breeding Unit until they pass three successive tuberculin tests. They will then join the existing buffalo unit comprising a bull and four females. A twelve acre buffalo paddock has already been fenced and prepared.

A QUICK LOOK AT TRINIDAD'S CITRUS INDUSTRY

by

Egbert A. Tai, M.Sc., D.I.C.T.A.

To several persons in Trinidad the term "citrus" refers only to grapefruit, to others it includes oranges as well and to relatively few it embraces limes, lemons, portugals too. In this rather cursory account of the impressions gained by the writer after short visits to a number of orchards in different parts of the island the widest interpretation is applied. These visits of inspection were undertaken with a view to obtaining first hand information on citrus growing in the colony preparatory to deciding on a policy with regard to the research and advisory work to be done as Agronomist.

Very grateful acknowledgement is made of the valuable assistance given by all those contacted in connexion with the survey. It is not possible to list all the individuals to whom the writer is indebted for guidance and for information, but it is desired to make special mention of the help rendered by Mr. F. W. Allen, Secretary/Manager of the Cooperative Citrus Growers Association, in providing a comprehensive list of citrus growers and making many very useful suggestions; thanks are also due to Messrs R. de Verteuil, H. N. Fahey and J. A. McDonald who took time off from their regular duties to conduct me over a number of orchards under their control, to the staff of the District Services of the Department of Agriculture and to the citrus estate owners and managers without whose ready cooperation it would not have been possible to obtain any information at all.

Procedure

A systematic orchard by orchard survey was not possible in the time that was available nor did it prove practicable to make the reconnaissance continuous. Visits to orchards were made as opportunity offered and took place between 18th June and 26th August with an earnest endeavour to include plantings that are representative of the various areas in which citrus fruits are produced.

Observations were made on the types of citrus fruit, location of the groves, systems of management practised and the performance of the trees. Experience of citrus growing in other countries was used as a measure for evaluation of Trinidad practices but no attempt was made to effect any direct comparisons.

Location of Orchards

Most of the orange and grapefruit orchards were planted on land on which cocoa had failed and are situated in the following areas—The valleys South of the main ridges of the Northern Range, the rolling plains of east-central Trinidad and slopes of the Central Range, the South-eastern corner of the island and scattered areas in oil field districts to the South. Lime groves are thinly distributed along the eastern and Southern coastal areas and the drier sections of the central districts. Other citrus fruit are grown in the same locations as grapefruit and oranges, usually in small mixed orchards; king orange (mandarins) and Sicily lemons were seen in sizable groves but pummelos citron, tangerine seldom occurred together in appreciable numbers.

It is quite evident that the basic requirements of citrus crops were not always sufficiently carefully considered in selection of the orchard sites. In several instances groves were seen where difficulties encountered in establishment and maintenance were directly traceable to inadequate attention to one or other of the important factors—climate, soil, topography, exposure.

Climate.

The variation in microclimate in different parts of Trinidad is remarkable; changes in rainfall, mean relative humidity and temperature ranges from district to district often mean the difference between success and failure in profitable orchard operation and merit some thought in choosing the spots for planting citrus. Excessive humidity in valley bottoms of the wet north-east and mid-central rainfall districts (Bain 1934) limits lime growing chiefly by its effect on withertip disease and also increases the cost of maintaining grapefruit and orange trees free of epiphytes, pests and diseases.

Soil.

While it is possible to grow citrus on nearly any type of soil, it is generally accepted that the most suitable is a medium loam, free to at least 4 feet of any layer impervious to water, high in organic matter content and the socalled major elements required for plant nutrition and slightly acid in reaction. It is believed that all of these conditions are satisfied in very few localities and where citrus is planted it is frequently necessary to institute measures designed to modify the conditions existing naturally to conform as far as possible with the desiderata. Very good orchards were observed on loams and silty clays of the River Estate, Cunupia, McBean, Moruga and Ecclesville series while large numbers of poor-looking trees could be seen on the heavy clays of the Brasso and L'Ebranche series and the Arena and Las Lomas sands (Chenery 1952).

Topography.

The importance of topography in locating citrus orchards is greater than is immediately apparent. Beside the effect on accessibility and field management practices with regard to the soil, air drainage, which in subtropical areas is vital for the avoidance of frost injury, is equally essential in tropical areas, for example Trinidad, for the regulation of the atmospheric humidity. Unobstructed gentle movements of air initiated by heat radiation from the soil surface and convection currents prevent the accumulation of excessive amounts of water vapour around the trees; too humid conditions are believed to be largely responsible for the high incidence of scab, melanose and thread-blight of grapefruit in the Talparo area and the closed valleys of the Montserrat hills.

Good air drainage is usually provided by sloping land but the degree of slope is by no means a proper measure, it is the elevation above adjacent lands and the outlet for moisture-saturated air that should receive main consideration.

Exposure.

Aspect and degree of exposure to wind appear to have been given full weight in the selection of sites for most Trinidad citrus groves. Use is frequently made of existing belts of natural forest and topographical features to provide shelter from the prevailing east wind which can have truly devastating effect on foliage of fruit trees. In a number of instances shade has been confused with wind protection and in addition to retaining old immortelle and other trees

in citrus orchards which were put in to replace cacao, some growers have planted others scattered through the citrus.

Wind injury is evident on limes on the east coast of the island and on some grapefruit and orange orchards growing on unprotected knolls in the central districts.

Management of Orchards

It is an established fact that for the best economic operation of any kind of orchard venture there are three basic essentials:

1. Good trees
2. Regulation of soil moisture
3. Maintenance of soil fertility

These are universal in application. In addition it is necessary to give attention to a number of local requirements such as control of pests and diseases, planting of windbreaks etc. All the practices employed in proper citrus orchard management are designed with these particular points in view and it was interesting to observe the extent to which procedures evolved in other countries were adopted and modified to suit Trinidad conditions. On the whole the cultural measures in force are extensive, rather than intensive, both as regards those applied directly to the tree (tree maintenance) and those applied to the soil (soil management).

The Trees.

The rapid growth that is normal with almost any type of crop in Trinidad has tended to mask, in the view of some citrus growers, the importance of using only first class nursery trees for establishment of groves and there is ample evidence that some poor planting material gets set out. The result is a lack of uniformity in the population of orchards and their consequent failure to perform at potential efficiency. It is best to make use of vigorous, healthy, well-developed plants only in setting out an orchard; it has been shown that a difference in vigor of budded plants in the nursery may persist for many years after they are transferred to the orchard (Webber 1932).

It is often difficult to distinguish between intrinsically poor nursery trees and good nursery trees at the time of planting as plants of different ages may be included in one lot of apparently uniform size and vigour. Usually the first year in the orchard shows up the differences and several growers prefer to pull out the weaklings and replace them

with new plants of superior vigour. This is regarded as good practice and if the supplies are given some extra attention they have a greater chance of catching up with the others than those they replace.

Sour orange is the most widely used rootstock. It has proved satisfactory for nearly all varieties but its known susceptibility to the dread Tristeza or Quick Decline has created interest in other stocks for orange and grapefruit. Old plantings of West Indian lime consisted of seedlings but Epidemic Dying Out disease has forced a change to buddings. Sour orange has exhibited symptoms of incompatibility with limes and rough lemon and "Dominica Wild Grapefruit" are preferred. Replacement of lime tops on sour orange roots with Valencia orange by the employment of a special topworking technique was seen in two estates in the Cumuto area.

Training of young citrus trees is not generally practised, free development is permitted in the nursery and after transplanting to orchards very little in the way of tree maintenance measures is applied until after the plants come into bearing. Subsequently most growers carry out light thinning of branches and removal of dead twigs annually. It is not surprising, then, that there is very great variation in the type of tree framework, picking of fruit is sometimes made difficult and frequently resort must be had to corrective pruning of large trees. It is believed that early training of trees in the nursery to a predetermined conformation followed by suppression of undesirable growth during the first two years after setting out the orchard should more than repay the effort required by ensuring development of compact, healthy, vigorous trees with properly spaced scaffold branches making it a simple matter to harvest the well-distributed fruit and apply sprays etc. among other advantages. The need for pruning bearing citrus trees can be reduced to a minimum by judicious training when they are young.

Soil Moisture.

It is axiomatic that no growth at all is possible without moisture but excessive moisture can adversely affect the development of citrus trees. Universal realisation of this by Trinidad citrus growers is evidenced by the attention given to drainage; cambered single-row beds separated by shallow open drains constitute standard practice. The superabundance of water caused by the high rainfall of the wet season (May to December) makes this essential to prevent the soil area occupied by citrus roots from becoming waterlogged for a considerable portion of the year.

In contrast with the excess of water during the wet season water stress is experienced by the majority of orchards during the dry season (January to April) as the water storing capacity of most of the soils is limited. It would be of great advantage to the citrus industry to devise economical means of carrying over water from the wet season for use by the trees during the dry season. Irrigation of groves was seen nowhere but attempts at regulating water supply to the citrus plants by manipulation of the cover crop (natural weeds in most cases) are made by some growers. Undergrowth in the orchards may be allowed to aid in reducing excess moisture during the wet season through transpiration; cut and used for mulching the citrus trees at the beginning of the dry season some conservation of moisture is effected.

Soil Fertility.

The majority of farmers in Trinidad are soil fertility conscious and a regular fertilizer programme was followed in nearly every citrus grove visited. Sulphate of Ammonia is very widely used on budded trees but to a considerably less extent on seedling limes. Up to 8 lbs. per annum (in two applications) to full-bearing trees of 10 years and older is not uncommon.

A few growers apply phosphate and potash also to their trees but none has claimed for these fertilizers the spectacular responses that are obtained with sulphate of ammonia in nearly every instance. Indications are, however, that increasing use is being made of natural rock phosphates and sulphate of potash.

The need for other elements in maintaining fertility of citrus lands is also apparent. Symptoms of magnesium and zinc deficiencies are widespread in grapefruit and orange. Annual applications of zinc sprays (2½ lbs. zinc sulphate 1¼ lbs. lime in 50 gallons water) and dressings of magnesium sulphate should result in appreciable improvement.

Farmyard manure is restricted in its use by unavailablity of large quantities. Its application to trees is regarded as beneficial by several growers although some suspect that the incidence of footrot is higher among trees receiving farmyard manure.

The timing of fertilizer applications to citrus has proved of extreme importance and most growers put "salt" around the trees in May and October, that is at the end of the long dry season and in the petit careme. At these times the

trees are at the commencement of periods of active growth and are probably able to absorb the nutrients before they can be leached away by heavy rains.

Little tillage of any kind is done in Trinidad orchards and the possibility of turning in cover crops to increase fertility is not exploited as in a number of other citrus growing countries. Leguminous cover crops are nevertheless planted sometimes with a view to improving nitrogen status. Tropical Kudzu is becoming a popular choice in this respect on account of its ability to outgrow weeds and its tolerance for shade which outweigh the disadvantage of its tendency to clamber over the trees unless kept in check. As yet no definite system of management of Kudzu cover crops seems to have been worked out, indefinite growth is permitted; it might transpire, however, that best results can be obtained by cutting the Kudzu twice a year at the times of applications of artificial fertilizers.

Pests and Diseases.

It is to be expected that in an area as rich in insect fauna as Trinidad there should be several which will feed on citrus. There are, but active pest control measures are seldom necessary where due attention is given to good management of the orchard in other respects and several of the best producing groves have never been treated with insecticide. The parasol ant or bachac is the most serious pest of young citrus trees, particularly Valencia orange, but fortunately can be effectively controlled by destruction of the nests with chlordane. Scales, aphids and thrips seldom cause great damage on account of the high relative humidity. Oil emulsion sprays are used with satisfactory results against these. One pest which is a problem at present is the black bee which occasions the loss of a sizeable proportion of the early oranges each year, as insecticidal measures directed against black bees may cause undesirable losses in honeybee populations.

Diseases caused by fungi are quite numerous, particularly where the citrus trees grow under near marginal conditions. On the main trunks occur the gummosis diseases the best known of which is the Brown-Rot or Mal di Goma caused by Phytophthora. Use of sour orange rootstock and high planting help in reducing the damage caused by this disease. Other types of gummosis resulting from attack by Phoma Diaporthe and a number of other organisms were seen affecting the rootstocks including sour orange as well as the scions of different varieties. Twig dieback and death

of leaves from various causes are widespread symptoms associated with Diplodia Phomopsis, Diaporthe were observed on grapefruit and oranges in the majority of the groves and the withertip of limes attributed to Colletotrichum limetticolum was everywhere. In few instances are control measures for these diseases attempted—Copper sprays as Bordeaux mixture or Perenox. Scarring and disfiguration of fruit is often a cause of serious loss to growers. Scab and melanose occur on grapefruit often to an alarming extent in the wetter districts particularly in locations of poor air drainage; withertip injury of lime fruit is prevalent inland but is slight on the coast.

Virus and bacterial diseases of citrus have not been recorded in Trinidad and no positive evidence was seen of their occurrence. The cause of the Epidemic Dying Out of limes has not been established nor is the reason clearly understood for the decline and death of grapefruit after 14 to 16 years in some orchards. Nutritional disorders appear to affect a large number of trees and may be responsible for unthriftiness in many instances.

Protection from Wind.

Throughout the year a more or less easterly wind blows across Trinidad and this is capable of causing severe injury to crops of all kinds, especially during the dry season. Where natural shelter from this wind does not exist it is realised by most citrus growers that the planting of windbreaks is a prime necessity for good orchards. Temporary shelter belts of Tephrosia candida for young plants are common and for the permanent windbreaks pomerac galba, rayo, Tonca bean, wild senna, teak, mahogany, sapucaia and other species were seen. The last named three do not appear to be entirely satisfactory on account of their deciduous habits; they shed their leaves at the time wind injury to citrus trees is most likely to occur.

That the timing of windbreak establishment and subsequent management are even more important than selection and planting does not appear to be fully appreciated by all grower. Instances were seen where windbreak trees were planted after the citrus and no provision was made for preventing competition for water and nutrients. It is important that the windbreaks be treated as an integral part of the orchard and subjected to such management as will ensure its serving fully the purpose for which it is intended. It should be planted well ahead of the citrus and receive proper fertilizing, training, etc. Usually it is advisable to

keep open a deep ditch between the windbreak row and the remainder of the orchard in order to minimise root competition.

Orchard Performance

The 1952-53 citrus crop was a very good one and high yields were recorded throughout the island. Several groves of grapefruit averaged 10 boxes to the tree and oranges 6 boxes at 8 years old and older. Indications are that yields will average somewhat lower in 1953-54 although in a number of instances they might be as good as or better than the previous season.

Average annual yields of citrus in Trinidad is difficult to estimate but are generally lower than are obtained in countries where production is on an intensive scale. Trinidad grapefruit trees give about 3 to 5 boxes to the tree as compared with 10 to 15 boxes in Florida; oranges give 2 to 3 boxes as compared with 8 to 12 in California; limes average less than ½ barrel as compared with 1½ to 2 barrels in Dominica. There is little doubt that the Trinidad averages are capable of being raised appreciably by application of intensive systems of orchard management as is demonstrated in a few individual groves in the central districts of the island.

The rate of growth obtained with citrus trees in Trinidad is rapid; even plants which receive no fertilizer often attain a height of 6 feet in two years. Because, however, of inadequate selection of the initial planting material very few groves were encountered with populations of uniformly vigourous trees and several had commenced to decline at an early age. In the Brasso area some grapefruit orchards showed signs of decline after only three years of full bearing.

Marketing

The bulk of the grapefruit and orange crops is handled each year by the Co-operative Citrus Growers' Association of Trinidad and Tobago which controls directly the export of both fresh fruits and canned juices to territories outside of the British Caribbean area. It is estimated that about 10 per cent of the total together with 20 per cent of the limes, all of the mandarins, pommelos and other varieties of minor importance may be sold as fresh fruit on the local market and in neighbouring British West Indian islands. Nearly all of the remainder of limes is manufactured into lime oil, the quantities of lime juice and citrate of lime being almost negligible in recent years.

Of the 1952-53 record crop of grapefruit and oranges 750,000 crates approximately passed through the packing house of the Co-operative Citrus Growers' Association; 180,000 boxes of grapefruit and 7,000 boxes of oranges were exported as fresh fruit and the balance found its way into cans as juice. It is planned to bring into operation for the 1953-54 crop a plant for the manufacture of cattle feed from citrus pulp.

There is little likelihood of any major change in the overall world marketing of citrus fruit in the immediate future. It is evident then, that increasing the profits of the Trinidad industry will be possible only with increasing efficiency with regard to details of production and marketing practices. In this connexion it will be advisable to adhere closely to accepted standards of quality and aim at placing and keeping the bulk of Trinidad's production in the highest class.

Trinidad grapefruit enjoys a proud name for flavour; this can be greatly enhanced by improvement of the appearance and this is easily possible if growers will give more attention to good orchard management. Proper picking is an important link in the chain. Reduction in the number of varieties of orange grown may prove desirable for ease of handling and turning out a uniform product with the minimum of effort. It is advisable, nevertheless, to grow selected varieties in the well-known groups—late, midseason, early—so as to extend the season of production especially for the benefit of local markets.

Perhaps an intensive exploitation of the market at home and in the West Indian islands will prove profitable for Trinidad citrus. With the improvements anticipated in inter-island communication the transport problem will not be insurmountable and effective standardisation of quality grades and packs should be easily practicable.

Conclusion

In conclusion it is opined that citrus growing in Trinidad is on an extensive rather than intensive scale when compared to production in other countries. Yields are generally lower as a direct result of lower expenditure of effort (and costs) in Trinidad citrus orchard management. Improvement of the industry lies in the application of more intensive methods throughout all phases of citrus from growing of plants in the nursery to marketing rather than in extending acreages.

The Department of Agriculture is engaged on a programme of investigation aimed at obtaining information on practices which may profitably be more widely adopted by citrus growers generally and it is planned to carry out a detailed survey of orchards in order to determine their needs and recommend measures for meeting them.

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3. Lucie-Smith, M.N.—Citrus Production in Trinidad. Reprinted from "The Peasant" 1951.

4. Webber, H.J.—Variations in Citrus Seedlings and their relation to rootstock selection. Hilgardia 7 : 1 1932.

REVIEW:

Pasture Management in the Tropics

In the September issue of the Agronomy Journal, published by the American Society of Agronomy,* is a report by Jose Vicente-Chandler, Ruben Cars-Costas and Jacinto Figarella on "The Effect of Cutting and Three Fertility-Levels on the Yield, Protien Content and Species Composition of a Tropical Kudzu and Molasses grass Pasture." Their findings should be of much interest to Trinidad farmers who are desirous of making the best use of Tropical Kudzu for feeding cattle and also, perhaps, to citrus growers who grow the species as a permanent cover in their orchards.

Cutting six times in two years at a height of ten inches above ground favoured growth of Kudzu and resulted in higher total yields than cutting at 4 inches. There was no significant effect on the yields of molasses grass but the quality as fodder was improved as the percentage of protein in the grass was increased "as the proportion of Kudzu in the mixture rose." Fertilizing with superphosphate and sulphate of potash raised the yields of both Kudzu and molasses grass and increased the protein content of molasses grass but did not materially affect the composition of Kudzu.

It is apparent, then, that high cutting of Kudzu is advisable for maintaining a good stand and that three cuttings a year should be practicable. For pastures and paddocks it is worth much to know that suppression of the grass population may be expected not to occur with spread of Kudzu but the information may be slightly discouraging with regard to the use of Kudzu as a smother crop.—*E.A.T.*

*2702 Monroe Street, Madison 5, Wisconsin, U.S.A.

DEPARTMENTAL NEWS

Dr. L. R. Hutson, Deputy Director of Agriculture (Animal Husbandry), attended the 1953 Convention of the American Veterinary Medical Association, held in Toronto from 20th to 23rd July. Later, from 9th to 15th August, he attended the Fifteenth International Veterinary Conference in Stockholm, Sweden.

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Mr. C. H. B. Williams, Director of Agriculture, proceeded on vacation leave to the United Kingdom and Europe on the 19th August. Dr. L. R. Hutson is acting Director while Dr. H. E. Williams acts as Deputy Director (Animal Husbandry).

The Director attended the 1953 Cocoa Conference held in London under the auspices of the Cocoa, Chocolate and Confectionery Alliance, Ltd., from 15th to 17th September. He also attended the International Genetics Conference held in Bellagio, Italy on 24th August.

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Dr. T. A. des Iles, Veterinary Officer, who had been on pre-retirement leave in the United Kingdom, returned to the Colony on 1st July, and retired from public service as from that date.

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Mr. J. S. Kenny, who joined the Department in February as Asst. Fishery Officer, was appointed Fish Culturist, and assumed the duties of the post on the 1st August.

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Mr. E. S. Capstick, Deputy Director (Crop Husbandry), proceeded on vacation leave to the United Kingdom on the 4th August. Mr. V. O. Ferrer, Marketing Officer, is acting Deputy Director.

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Mr. E. E. Seignoret assumed duties as Agricultural Officer (Personal Assistant to the Director of Agriculture) on the 11th August.

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Dr. B. G. Montserin, Deputy Director (Research), returned to the colony from vacation leave in the United Kingdom on the 14th August. Mr. D. M. Hanschell and Mr. E. A. Tai acted at different times as Deputy Director (Research) in his absence.

Mr. F. D. Davies, Agricultural Officer, Tobago, retired from public service on 15th August, and Mr. E. J. Hamilton was promoted to the post. Mr. A. N. Xavier replaced Mr. Hamilton as S.A.A., North-East.

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Mr. V. C. R. Henry left for Antigua on 28th August and later proceeded direct to Canada on study leave. Mr. Sydney Achong took over his duties as S.A.A., South-East, while Mr. S. Redman from Tobago, is acting in place of Mr. H. H. Beach in the Victoria-St. Patrick area.

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Mr. A. E. Pugh, Rehabilitation Officer, assumed duties on the 1st September.

Visitors.

D. R. Melrose, B.Sc., M.R.C.V.S. Artificial Insemination Officer, Ministry of Agriculture and Fisheries, passed through Trinidad on his way to Grenada and visited the Department.

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Dr. E. J. Reyntjes, former head of the Fisheries Division in Surinam, conducted a survey of fish culture in the colony between June 15th and September 10th.

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Mr. J. L. Thompson, Supervisor of Practical Training Centres in Jamaica, visited the Central Experiment Station at Centeno early in August.

Recent Departmental Publications.

Progress in dairying at St. Joseph Stock Farm, 1948-52 by L. R. Hutson D.V.Sc., (Deputy Director of Agriculture (Animal Husbandry))

Regulations concerning the importation of plants and plant products. Bulletin No. 5 of the Department of Agriculture Trinidad and Tobago (New Series)

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